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VOLUME 35 NUMBER 11 CALCUTTA DECEMBER 1, 1960

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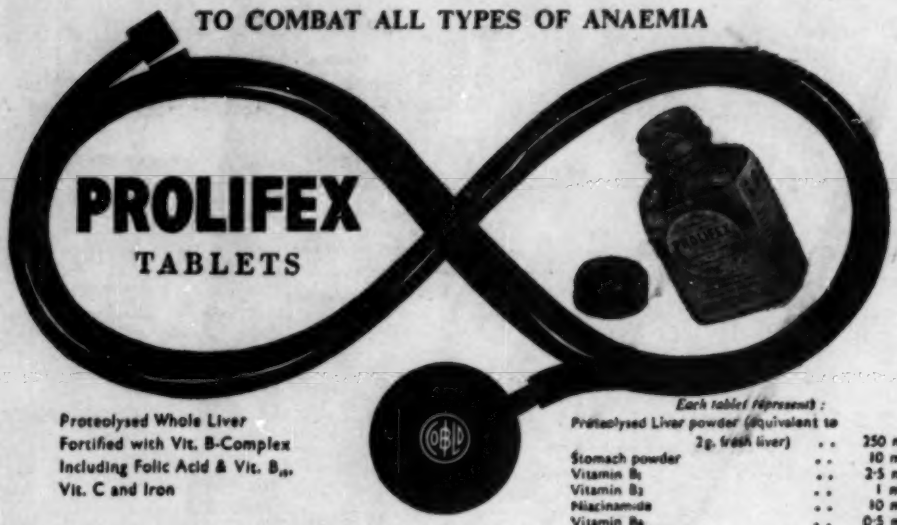

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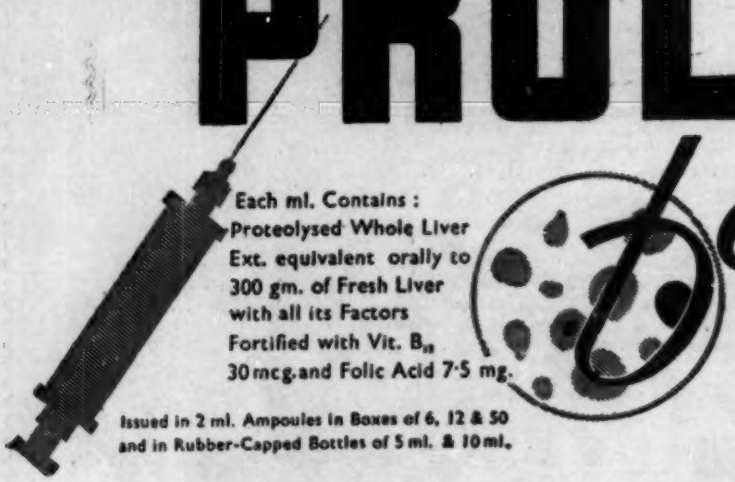

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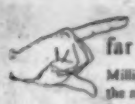

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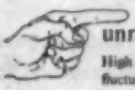

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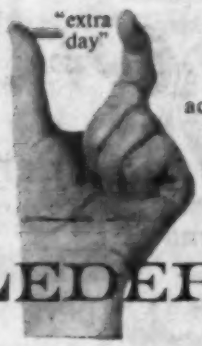

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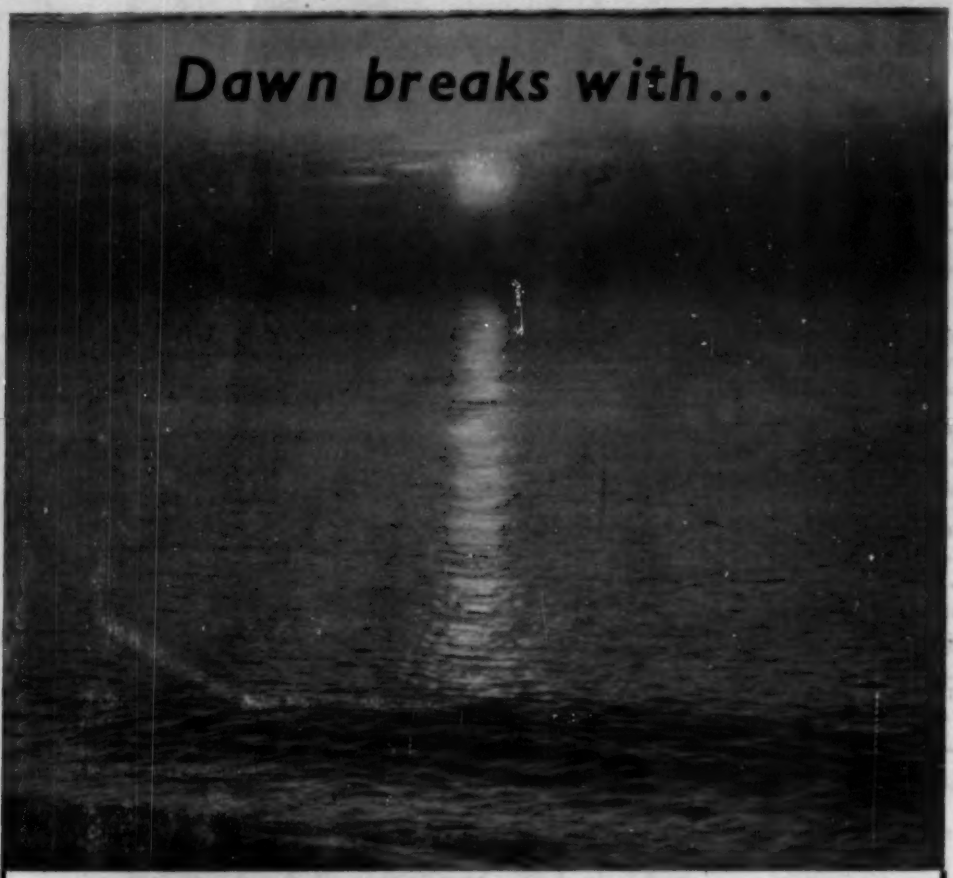

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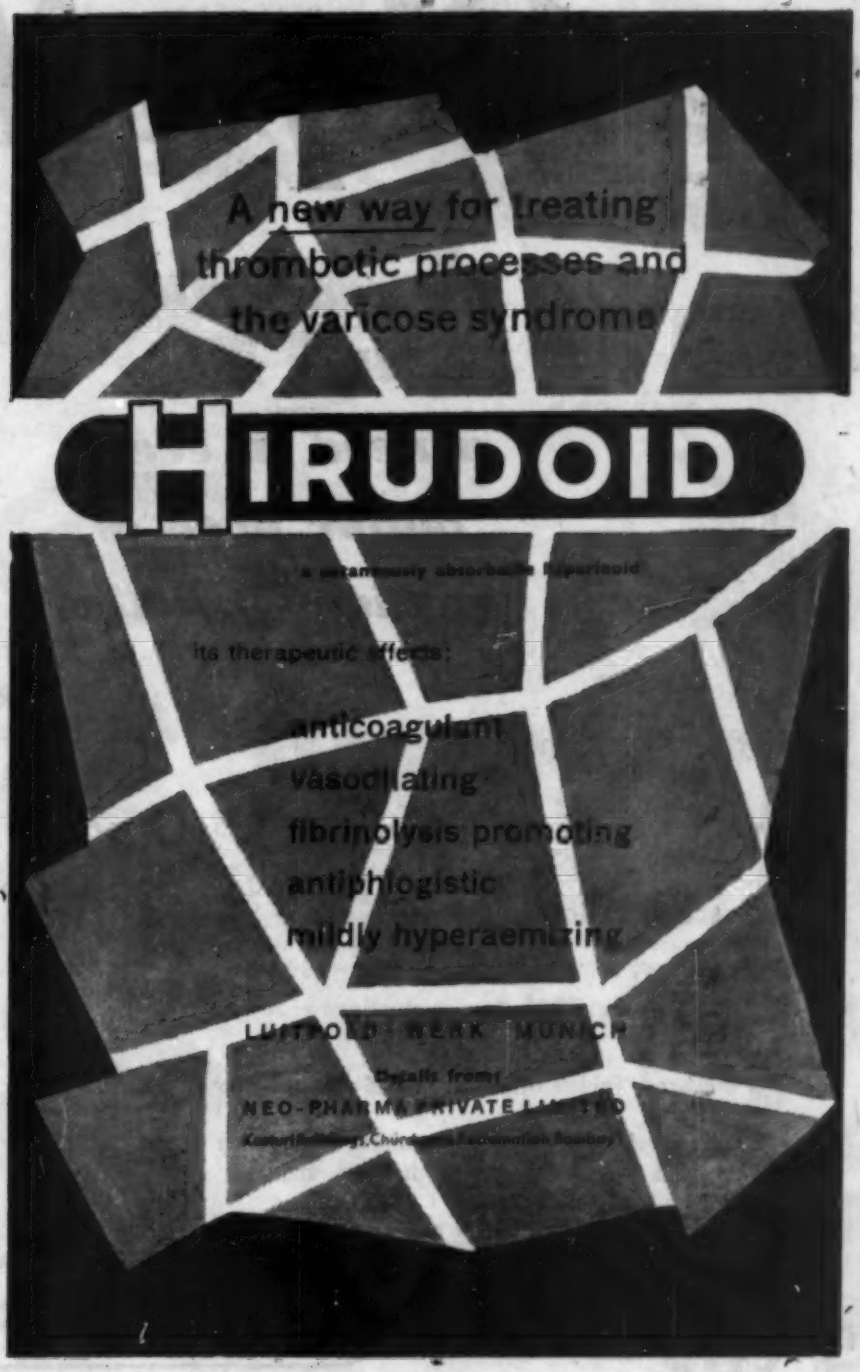
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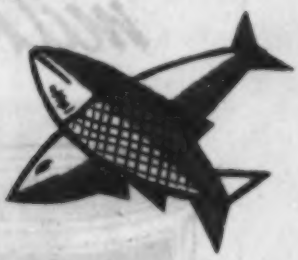

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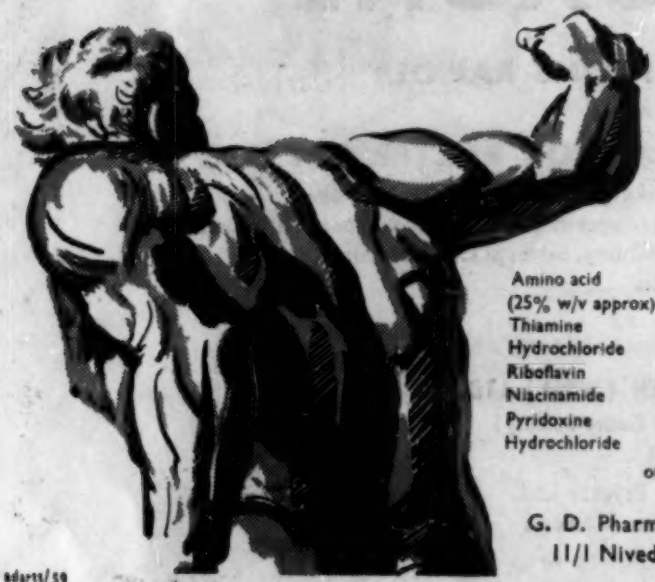

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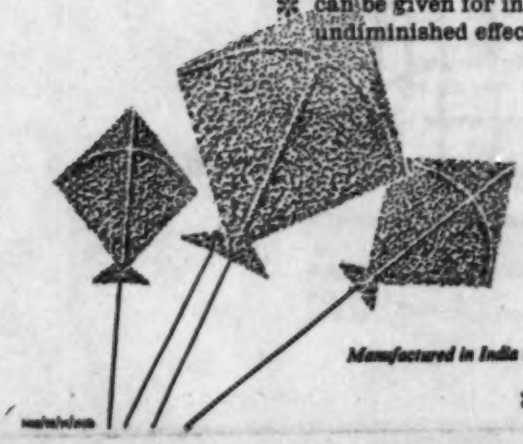

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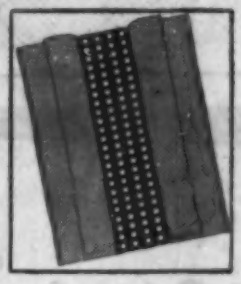

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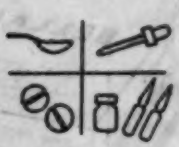

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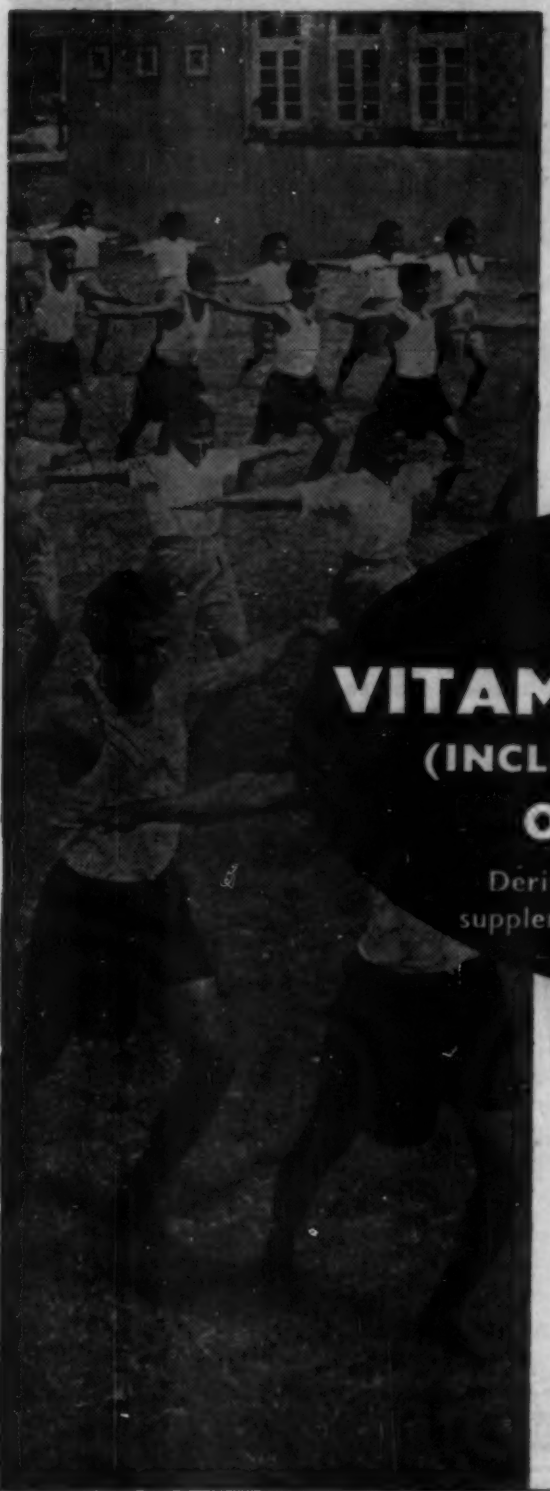

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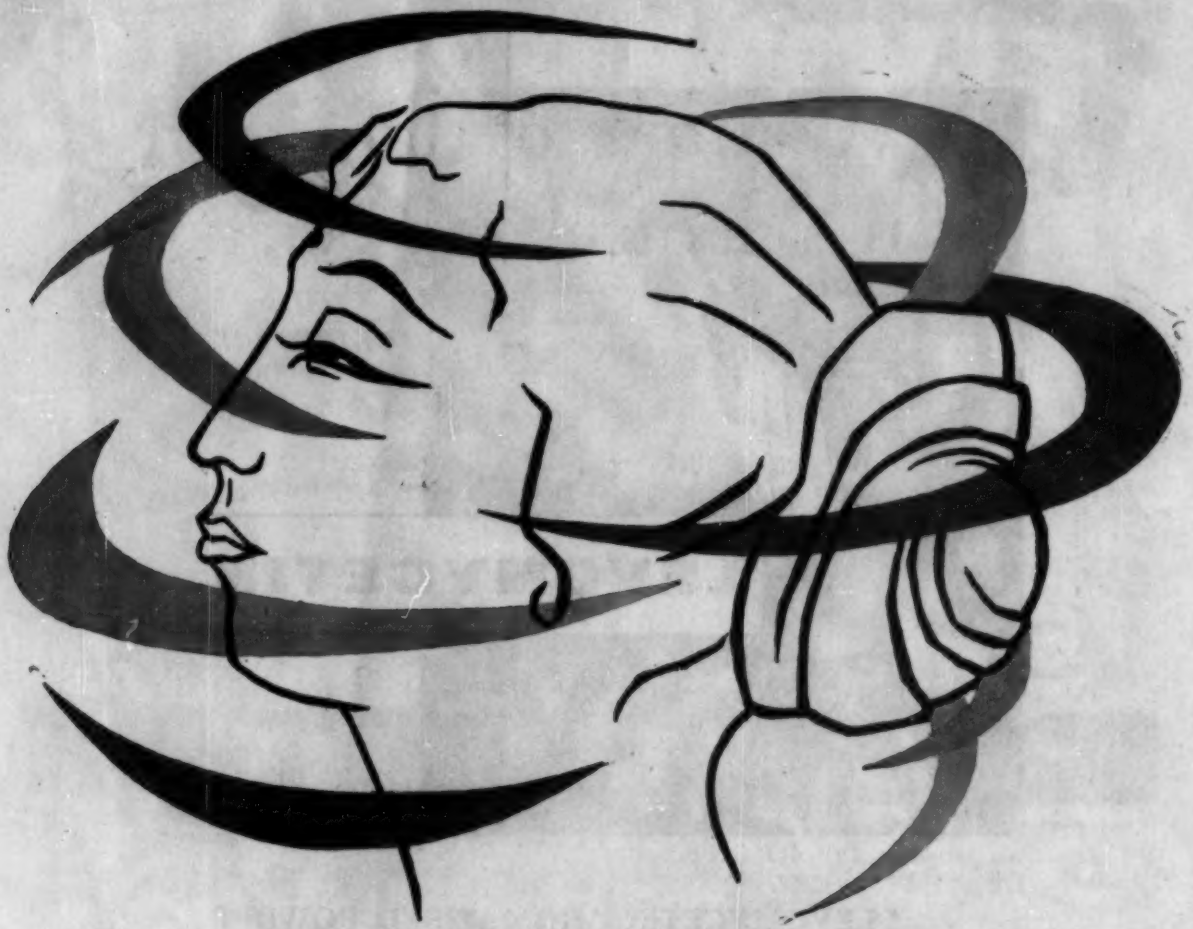

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Journal of the Indian Medical Association

VOLUME 35
NUMBER 11

PUBLISHED TWICE A MONTH
EDITOR—P. K. GUHA, M.B., M.R.C.S. (ENG.), D.O.M.S. (LOND.)

CALCUTTA
DECEMBER 1, 1960

ORIGINAL ARTICLES

IRREDUCIBILITY AND STRANGULATION IN OBLIQUE INDIRECT INGUINAL HERNIA: A NEW CONCEPT OF ITS AETIOLOGY AND PATHOLOGY

(With 12 Case Reports)

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INTRODUCTION

The word hernia is derived from the word 'Hernios' (Zimmerman and Anson, 1953) meaning a branch or offshoot and is merely descriptive of the swelling that the lesion produces. Hernia may, however, be defined as an abnormal protrusion of a viscus or tissue through an abnormal (or rarely normal) opening. It represents a disparity between the intra-abdominal pressure and the strength and competence of the retaining abdominal wall.

The significant determining factors for the production of inguinal hernia are: (1) the size of the hernial orifices, (2) the nature and the competence of the muscular wall, and (3) the presence of a peritoneal dimple, depression or a sac. However it must be made clear that mere presence of a sac does not constitute hernia.

The protections against the occurrence of hernia through the inguinal canal are: (1) the small size and funnel shape of the internal ring, (2) the obliquity of the inguinal canal, and (3) the shutter-like action of the internal oblique and the transversus abdominis muscles. Once the protection of the inguinal canal is gone, indirect inguinal hernias will result. They may be reducible or irreducible; others may be irreducible and obstructed and yet others strangulated.

The purpose of this paper is to describe

(1) Certain important points in the anatomy of the inguinal region in relation to inguinal hernia,

(2) The changes produced in the pathological anatomy at the hernial site, and

(3) The causes of sudden irreducibility or sudden irreducibility and strangulation.

It must be initially made clear that when we mean irreducibility we mean failure of facile reduction; otherwise any irreducible hernia can be made reducible by forceful reduction and this may lead to serious consequences in some cases.

CLASSIFICATION OF IRREDUCIBLE HERNIA

Having seen a large number of irreducible and strangulated hernia cases in hospital and private practice one may conveniently classify them into four groups:

(1) Cases which were reducible for a long time and then due to patient's neglect (either due to failure of the patient to reduce it or get it reduced) if it is allowed to remain in the sac for

sometime, secondary changes develop in the sac or in the contents and they no longer enjoy the easy (facile) reducibility or become irreducible.

(2) There is another group, in which a previously reducible hernia suddenly becomes irreducible and then in spite of the patient's immediate efforts, remains irreducible unless treated operatively or undue pressure or force is applied by the patient or an incompetent doctor.

(3) In this group fall cases which originally were group (1) and (2) cases but have later on developed complications of obstruction and/or strangulation.

(4) Cases which simultaneously and for the first time become suddenly irreducible and strangulated. In this study we are mainly concerned with group (2) and group (4) cases.

OLD CONCEPT :

For a long time it has been thought that the causes of irreducibility (Erdman, 1927 ; Watson, 1948 ; Zimmerman and Anson, 1953 ; Aird, 1957) of indirect hernias are :

1. The size of the hernial contents exceeds the diameter of the hernial orifice, that is, there is a disparity between the size of the opening and the contents.

2. Matting between the contents themselves or between the sac and the contents and loculation of the sac. (These are the results of infection, relative ischaemia or traumatic inflammation and are the secondary changes produced in neglected cases of inguinal hernia.)

3. Sudden and excessive increase in the intra-abdominal pressure forcing the gases and liquids in the herniated coils of the intestine.

4. Accumulation of excess of fat in the hernial contents specially when the content is the greater omentum and which is allowed to remain in the sac for some time.

NEW CONCEPT :

The problem—The reasons given above do not satisfactorily explain the causes of sudden irreducibility specially in group (2) and (4) cases. It appears that there must be some other factor responsible for the condition. For sometime we have been perplexed with this problem. Why does a reducible hernia suddenly become irreducible? We can understand the causes of irreducibility in neglected cases of indirect inguinal hernias specially the cases falling in group (1). We, however, fail to understand the cause of sudden irreducibility, specially in group (2) and (4) cases.

Anatomy—We do not propose here to discuss the detailed and complete anatomy of the inguinal canal for which the readers may refer to numerous articles and books published on the subject (Carp, 1924 ; Petit, 1924 ; Brash, 1948 ; Grant, 1948 ; Coley, 1950 ; Brash, 1951 ; Zimmerman and Anson, 1953 ; Last, 1954 ; Johnstone and Whills, 1954 ; Hollingshead, 1956). It will however be proper to mention a few important facts in relation to our subject.

Preperitoneal connective tissue—Just outside the parietal peritoneum there is a layer of fibrofatty tissue—the preperitoneal, subperitoneal, retroperitoneal or extraperitoneal fibrofatty tissue, which is present all over the abdomen. In the inguinal region are lodged certain structures, e.g., the inferior epigastric artery, the abdominal part of the vas deferens, the vessels of the cord ; below there are the iliac vessels ; and medially the obliterated umbilical artery and the urachus. It can be traced down into the pelvis as an excellent and abundant packing material for the viscera and the vessels. This is an important structure which may form the chief bulk of certain cases of femoral and direct inguinal hernias. This layer has been described as alveolar, adipose or membranous layer and its consistency varies at different places.

In the inguinal region this fibrofatty structure is markedly hypertrophied (Brash, 1951 ; Petit, 1924) and is primarily an alveolar layer with variable amount of fat in it. In some cases of inguinal hernia this layer is so much hypertrophied locally that it forms a considerable membranous coat for the diverticular process of the peritoneum and may in rare cases form a covering of the sac.

This layer is primarily an alveolar layer with strands of fibrous tissue in it. In thin people it may remain as such or may become a membranous layer whereas in the obese variable amounts of fat may be present in it. However a careful dissection will show that there are firm strands of fibrous tissue in this preperitoneal layer which extends between the external surface of the peritoneum and the fascia transversalis. Our operative findings also clearly demonstrate these—strong bands of fibrous tissue extend between the external surface of the hernial sac through the preperitoneal layer and the fascia transversalis. These bands or strands are of variable thickness and strength. They are very well seen round the internal ring where they are most developed and are comparatively thicker and stronger. Fine lacy strands of fibrous tissue converge and continue along the edge of the internal ring like the edge of an adjustable camera dia-

phragm. These fibres anchor the neck of the sac at this level. In unsupported big hernias, stress of the weight is responsible for the hypertrophy of this layer. These fibres can be well demonstrated in every case of indirect reducible inguinal hernia. It appears that these strands at the internal ring are of supreme importance and their tearing away causes the neck to lose its anchorage. Here, they are directed obliquely and surround the whole of the internal ring. These bands can be well seen and have to be torn at operation by gauge dissection at the internal ring.

Clinical observation—Any observant surgeon must have seen these strands. A careful dissection of these strands is necessary to expose the highest point of the neck of the sac. Sometimes these fibres are so strong that they have to be cut with scissors. These strong and firm bands of fibrous tissue bind down the external surface of the neck of the sac to the structures around it, i.e., they extend between the sac and the fascia transversalis anteriorly and anterolaterally, and the sac and the spermatic cord posteriorly. These important strands of fibrous tissue fix the neck of the sac to the surrounding structure and may conveniently be called the 'retinaculum of the neck of the sac' (Figs. 1 and 2).

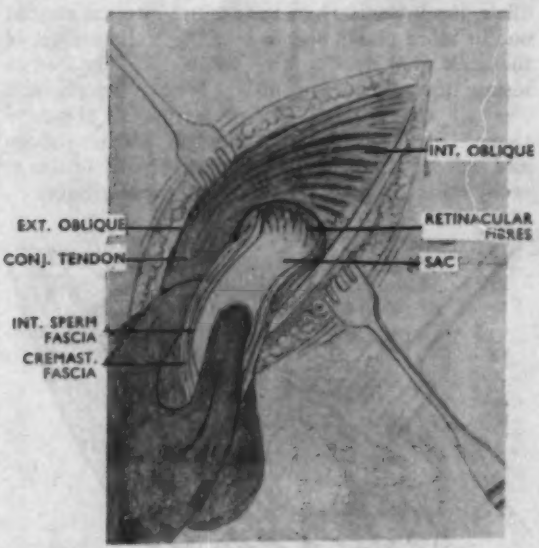

FIG. 1—SHOWING THE EXPOSED INGUINAL CANAL AND THE SAC PARTLY DISSECTED FROM ITS COVERINGS. THE POSITION AND CHARACTER OF THE 'RETINACULUM OF THE NECK OF THE SAC' AT THE INTERNAL RING MAY BE SEEN.

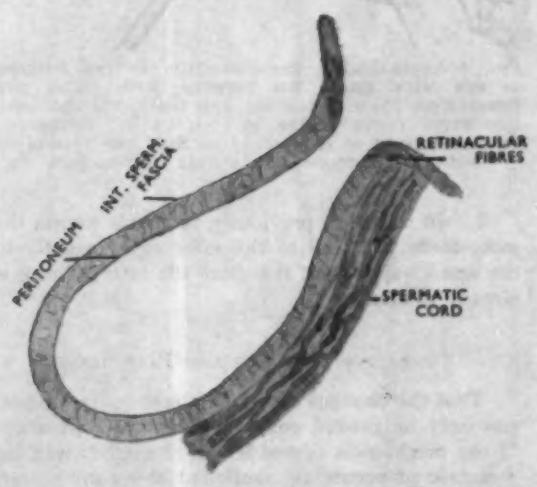

FIG. 2—SHOWING THE 'RETINACULUM OF THE NECK OF THE SAC' IN SECTION

PATHOLOGICAL CHANGES IN IRREDUCIBLE INDIRECT INGUINAL HERNIA

Mechanism of sudden irreducibility—For the indirect inguinal hernias to become suddenly irreducible the following sequence and pathological changes must take place:

1. The internal inguinal ring which is the opening in the fascia transversalis must become stretched and dilated and its diameter must become suddenly increased.
2. Being a fascia it cannot be stretched beyond a certain point. If the stretching is marked or the dilatation is sudden, the internal ring must be torn at one or several points (Fig. 3).

FIG. 3—DIAGRAMMATIC REPRESENTATION OF TEARING OF THE INTERNAL RING AT ONE OR MORE PLACES.

3. The increased intra-abdominal pressure now exerts its action more effectively and the sac can now descend more forcibly. The neck of the sac, however, is fixed by the 'retinaculum of the neck of the sac', and though it may still remain fixed for some time, it bears the recurrent severe strain.
4. During one of the severe episodes of the increased intra-abdominal pressure, the retinacular fibres of the neck may get torn.
5. If and when this happens the neck loses its anchorage. The neck now becomes mobile. It can now descend and can be further

brought down by giving the slightest traction on the sac. Similarly due to loss of its anchorage the neck can ascend. If pressure is applied on the sac of such an irreducible hernia this will make the neck project up in the peritoneal cavity like a knob, through the enlarged or torn and disproportionate internal ring.

6. This leads to the production of irreducible hernia according to the physical law we are going to enunciate.

Physical law—If an orifice can transmit a structure easily, it can also let it go back, provided only that there have not occurred any other changes in or around the orifice or in the transmitted structures themselves.

The ordinary physical law is that pressure can only be applied to a fixed point and that no mass can be stretched unless it is fixed. If pressure is applied to a point which is mobile or lax, the force of pressure or stress is lost and it mostly becomes ineffective.

Criteria on which the New Concept is Based

Clinical—In a reducible hernia, according to what has been said before, the hernial orifice must be fixed and if pressure is applied to the fundus of the sac in such a hernia, the descending elements of the contents, i.e., the gas and the fluid and then the contents themselves will return to the abdominal cavity, because the force applied on the sac will have full effect.

In an irreducible hernia of sudden onset, the force applied to the fundus of the sac for reduction becomes greatly ineffective and the neck of the sac moves up and down on pressure, because the neck has lost its anchorage as the retinacular fibres are torn. In such cases facile reduction is not possible. However if excessive force is applied, the neck ascends as much as it can go and then becomes somewhat fixed and reduction can then take place ; in some cases reduction *en masse* is the result.

A new test for sudden irreducibility—An observant clinician must have noticed that in cases of sudden irreducible hernias, the whole hernial sac with the neck moves up and down. Here the neck of the sac moves up and down through the internal ring and the neck can project inside the abdominal cavity during reduction of hernia, if the force applied is sufficiently strong.

In other words, for facile reduction to take place the neck of the sac must be fixed to the fascia transversalis at the internal ring by the 'retinaculum to the neck of the sac'. If this anchorage is lost, reducible hernia suddenly becomes irreducible.

Clinically, therefore, in cases of hernia if one finds the neck moving up and down, this test suffices to diagnose that the case is one of irreducible hernia. This is easily seen in thin patients. In such cases the treatment should be an operation rather than foreful reduction, even though there is no obstruction or strangulation.

Pathogenesis—1. For the sudden appearance of irreducible hernia in the case of a person without any history of hernia, the force of increased intra-abdominal pressure must be very severe so as to dilate the internal ring, to tear the internal ring at one or more places and to tear the 'retinaculum of the neck of the sac'. This will necessarily lead to losing the anchorage of the neck, which will descend and with it the preperitoneal fibrofatty tissue (Fig. 4) will also descend. This sudden and severe trauma may lead to local bruising, ecchymosis or petechial areas of haemorrhage.

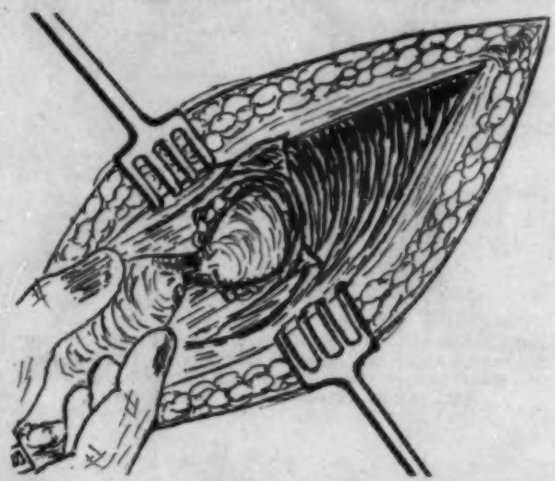

Fig. 4—Diagrammatic Representation of the Descent of the Neck below the Internal Ring. Note the Constricted Neck of the Sac, and the Extraperitoneal Fibrofatty Tissue in the Inguinal Canal, Extending up to the Neck of the Sac. Also Note the Absence of the 'Retinaculum of the Neck of the Sac'.

2. In a case of previously reducible hernia the same force will lead to the same effect exactly in the same way except that here the internal ring is already dilated.

Operative Findings and Pathology

That the changes described above really happen, can only be proved conclusively at the operation. If the mechanism of sudden irreducibility and the sequence of events as mentioned above are correct then one expects to find the following: (1) dilata-

TABLE I—SHOWING DETAILS OF THE 12 CASES OF IRREDUCIBLE INGUINAL HERNIA

Case No.	Age (years)	Type of hernia originally present (with duration)	Attack of irreducibility			Authors' test of irreducibility	Position of the neck of the sac in relation to the internal inguinal ring	Existence of fibrofatty extraperitoneal tissue in the inguinal canal	Ecchymosis at the external surface of the neck of the sac	Type of operation done	Remarks
			First attack	No. of attacks	Last attack						
1	60	Right-sided complete indirect inguinal hernia (5 years)	Since the last 12 hours	One	Since the last 12 hours	++	½" below	Present ++	Present	Herniorrhaphy	Some areas of ecchymosis seen in the internal surface of the neck of sac. A long - standing case
2	35	Right-sided complete indirect inguinal hernia (2 hours)	Since about a day	One	Since about a day	+++	1" below	Present ++	Present	Herniorrhaphy	Simultaneously and for the 1st time irreducible and strangulated
3	50	Right-sided complete indirect inguinal hernia (3 years)	1 year back	Several	Since a day	++	1" below	Present ++ on the anterior surface of the sac	Absent	Mair's dermatoplasty	
4	70	Bilateral complete indirect inguinal hernia—left bigger than the right (16 years)	7 months back on left side	Several episodes (left side)	2 weeks back on left side; reduced with difficulty by local doctor	0	¼" below	Present ++ on the posteromedial aspect of the sac	Absent	Mair's dermatoplasty on the left side	
5	30	Right-sided complete indirect inguinal hernia and also a direct hernia on the right side (3 years)	6 weeks	2	3 weeks back; treated by forceful reduction by local doctor	0	1" below	Present +++ both in inguinal canal and in Hesselbach's	Absent	Mair's dermatoplasty	An example of dual or pantaloon hernia
6	50	Right-sided complete indirect inguinal hernia (4 years)	One month back	3	2 days prior to admission, treated by reduction by local doctor	0	¼" below	Present ++	Absent	Herniorrhaphy with silk	

Note—Under Authors' test of irreducibility: 0=Not elicited.
Retinaculum of the neck of the sac absent in all cases except Case 12.

TABLE 1—*Contd.*

Case No.	Age (years)	Type of hernia originally present (with duration)	Attack of irreducibility: First attack	Attack of irreducibility: No. of attacks	Attack of irreducibility: Last attack	Authors' test of irreducibility	Position of the neck of the sac in relation to the internal inguinal ring	Existence of fibrofatty extraperitoneal tissue in the inguinal canal	Ecchymosis at the external surface of the neck of the sac	Type of operation done	Remarks
7	29	Right-sided complete indirect inguinal hernia (since Feb. 59)	4 months back	2	1 month back reduction by local doctor	0	¼" below	Present ++	Absent	Mair's dermatoplasty	
8	30	Congenital right-sided complete indirect hernia (since infancy)	6 months back	Several	1 month back reduction by local doctors	0	1" below	Present ++	Absent	Herniorrhaphy	
9	30	Left-sided complete indirect inguinal hernia (3 years)	Since morning of date of visit	One	Since morning of date of visit	++	1" below	Present ++	Small areas of bruise	Herniorrhaphy	Simultaneous association of filarial scrotum and bilateral hydrocele
10	20	Left-sided congenital inguinal indirect hernia (since birth)	3 months back	3	2 weeks back, reduction by local doctor	0	1½" below	Present ++	Absent	Herniorrhaphy	Refer Fig. 5
11	35	Right-sided reducible complete indirect inguinal hernia (9 years)	3 months back	One attack only	3 months back, reduction by local doctor	0	½" below	Present ++ associated with large dilated lymph varices	Absent	Blood given (good operation)	Associated large size lymph varices in the inguinal canal
12	34	Right-sided small complete reducible hernia—7 to 8 years	Nil	Nil	Nil	–	At the ring	Nil	Nil	Herniorrhaphy	

Note—Under Authors' test of irreducibility : 0=Not elicited.
Retinaculum of the neck of the sac absent in all cases except Case 12.

tion of the internal ring, (2) tearing of the ring at one or more places, (3) tearing of the 'retinacular fibres of the neck of the sac' or their absence from the usual anatomical site, (4) bruising or ecchymosis on the external surface of the neck of the sac (in recent cases only), (5) undue mobility of the neck of the sac, which descends upto 1½" (Fig. 4), (6) the inferior epigastric artery remains at its usual position consistent with the original size of the neck, and (7) the extraperitoneal fat is easily visible, and in fact in many cases it can be seen lying in the inguinal canal and is obvious without the slightest traction on the sac (Fig. 4).

That these changes do happen is evident by the clinical examination and our specific test. It can also be clearly demonstrated at the operation (Fig. 5).

FIG. 5—PHOTOGRAPH OF THE REMOVED HERNIAL SAC (CASE 10), SHOWING THAT THE NECK HAS DESCENDED
In such cases it is quite easy and in fact advisable to ligate the sac at a point much higher than the constricted area of the neck of the sac.

In all our cases of sudden irreducible hernia in thin patients, we have clinically seen the neck moving up and down with each application of pressure at the fundus of the sac.

While at the operation, the moment the canal is opened the following findings are obvious:

(1) the extraperitoneal fat is most easily visible without any traction on the sac (Fig. 4),

(2) the inferior epigastric artery is seen at its normal position and the extraperitoneal fibrofatty tissue is seen extruding into the inguinal canal beyond the artery,

(3) the ecchymosis at the external surface of the sac is obvious in cases operated upon early during the first attack of irreducibility,

(4) sometimes a small haematoma is seen at the neck on its external surface, and

(5) the retinacular fibres are no more visible and the sac, at the region of the neck, is very easily separated. Some of these findings show that the retinacular fibres of the neck of the sac have been torn and a small amount of bleeding has taken place leading to an area of ecchymosis or even a haematoma at the external surface of the neck.

MATERIAL

Clinical and operative findings of twelve cases of indirect inguinal hernias have been recorded (Table 1). Four (Cases 1, 2, 3, and 9) out of the 12 cases, were operated upon during the attack of irreducibility. Of these 4 cases, 2 (Cases 1 and 9) had complete indirect inguinal hernia of long duration, which had for the first time become irreducible. Case 2 who never had any hernia before suddenly developed irreducible and strangulated hernia simultaneously and for the first time.

Seven cases (Cases 4, 5, 6, 7, 8, 10 and 11) who had previous history of sudden irreducibility and who had been treated by forceful reduction by the patient or an incompetent doctor, have also been described to illustrate the operative findings of such cases.

One case of complete indirect inguinal hernia, who never had any episode of irreducibility (Case 12), has also been described to illustrate the difference in the operative findings in such cases with cases who had previous attack or attacks of irreducibility.

Full clinical and operative findings are given in Table 1.

SUMMARY

Certain points in the anatomy of the inguinal region in relation to the indirect inguinal hernia have been described. Strong fibrous bands at the neck of the hernial sac which keep the neck of the sac in position have been observed. These have been named 'retinaculum of the neck of the sac'. They are torn during the first attack of irreducibility and are absent in such cases. The cause of irreducibility is the sudden tearing of these fibres.

A new test for irreducibility of indirect inguinal hernia has been described and the mechanism of sudden irreducibility has been fully discussed.

ACKNOWLEDGMENT

We are grateful to Dr. B. Guha Mazumdar, Superintendent, N. R. S. Medical College and Hospitals, Calcutta and Dr. K. N. De, Superintendent, Islamia Hospital, Calcutta, for allowing us the use of the hospital records. We are also thankful to Mr. M. S. Salehjee, Honorary Secretary, Islamia Hospital, for the same.

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GENITAL HYPOPLASIA AND APLASIA

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INTRODUCTION

The idea of having a survey of the problem of genital hypoplasia and aplasia, regarding its incidence and the likely aetiological factors, continued to worry our minds when we came across a large number of patients in the out-patients department, who, though apparently healthy-looking, suffered anatomically, physiologically, psychologically and socially from the various manifestations of genital hypoplasia and aplasia. The incidence seemed to be quite striking in this part of the State. To a layman or even to a doctor, a majority of these patients looked quite healthy and well-built giving rise to no suspicion of any underdevelopment in those organs on which depend the future generation and the future of the man and woman united by the sacred bond of marriage. The mental torture of these unfortunate women was so keenly felt by us that we decided to find out the enormity of the problem by going into the details of their histories, examinations, etc, so that we could determine the aetiological factors responsible for this underdevelopment, and alleviate to a certain extent their sufferings.

Particularly in India, the social problems arising from these conditions are more often due to (1) early marriage in childhood before menarche, and (2) the social set-up which encourages a woman to bear children in the early period of her married life. A woman who fails in this function of hers is looked down upon by everyone around her even though she may be a good housewife in every other way.

The medical science is progressing rapidly but no clues are yet available about the causes of many of these developmental defects.

MATERIAL

Our cases were divided into two groups:

(A) Definite cases of genital hypoplasia detected in the O.P.D. of Sheth Vadilal Sarabhai General Hospital and Sheth Chinai Maternity Hospital, Ahmedabad, were studied.

(B) A general study was made of girls round about the average age of menarche from high schools and colleges. This was done with the idea of getting information about the likelihood of genital hypoplasia in girls of this age—the age of onset of menstruation being considered more or less indicative of genital development.

200 patients were studied in group A and 750 subjects in group B. A proforma was prepared to to get as much information about them as possible with our limited resources, particularly for the investigation regarding hormone estimation which we have learnt most from selected patients.

In group A, the age of the patients ranged from 16 to 36 years and only two patients were 40 years old. 127 patients were between 20 and 30 years and 35 between 16 and 19 years, and the rest were above the age of 30. Thus the majority of the patients were seen when they were

well over the average age of menarche and in the best years of a woman's reproductive life.

The results of observations in group B cases are not included in this article as they form the subject matter of a separate article.

Observations

GENERAL :

The most common complaints of the patients were : Primary sterility of varying duration with or without scanty and delayed periods ; primary amenorrhoea ; secondary amenorrhoea ; secondary sterility and delayed and scanty periods. Only 8 patients in the series were unmarried of which 3 had primary amenorrhoea and were below the age of 20, and others had come for delayed periods.

Menstrual history—Scanty and delayed periods were the chief complaints in sterile patients who more often visited the doctor for this complaint in association with/or sterility.

The age of menarche in the series varied between 13 and 19 years with an average of 14½ years. This figure is a little higher than that found in the general population of Gujarat.

Dysmenorrhoea was a common finding. 115 patients complained of dysmenorrhoea of varying degree at sometime or other of the menstruation.

Secondary sex characters were well developed in most of these patients. Of 15 patients who had underdeveloped secondary sex characters, 8 had primary amenorrhoea while 13 out of 21 cases of primary amenorrhoea had normal secondary sex characters. There were 15 patients with male type of hair distribution.

Infection—Out of 200 patients 42 gave history of mumps sometime or other in childhood. It did not seem to affect the development, as no relation was found between the degree of underdevelopment and history of mumps. Malaria was complained of by 37 patients, whereas 38 patients had low-grade fever off and on. 14 patients gave history of having typhoid fever and 23 patients influenza. Pulmonary tuberculosis was seen in only one of the patients, though one patient had cervical tubercular lymphadenitis and two patients had Koch's endometritis—the last three patients had delayed and scanty periods.

Vitamin deficiency—Vitamin C deficiency was very commonly found in this series. 47 patients showed evident signs of the deficiency. Surprisingly vitamin B deficiency was seen only in 9 patients. 12 patients showed signs of vitamin A and vitamin D deficiencies.

Anaemia—There were 43 cases of mild to severe degree of anaemia. Two cases with severe anaemia and signs of severe malnutrition had primary amenorrhoea at the age of 20. Of the anaemic patients, 5 had primary amenorrhoea and 13 complained of delayed periods.

Family history—The family histories of all the patients were taken in detail, especially regarding the other sisters, mother, etc., to find out if other members of the family showed any symptoms of underdevelopment like late menarche, primary or secondary amenorrhoea, sterility or low fertility. 10 gave history of sterility in the sister, 6 of sterility in the brother and 5 gave a history of having each a small family.

Obesity—56 out of 200 patients were found to be more or less obese. This had no relation with primary amenorrhoea. Obesity in other family members was complained of by only 3 patients. The majority of the patients attributed the increase in fat to scanty and delayed periods. A few attributed it to marriage.

Height and span—The height of the patients varied between 56″ and 64″, the majority being below 60″. Only one patient was 70½″ tall, with a span of 80″.

Out of 200 patients, 161 showed a span longer than the height by 1″ to 6″. Of these 161, 19 were cases of primary amenorrhoea, i.e., only 2 cases of primary amenorrhoea showed a normal span-to-height ratio.

Uterine index—The uterine index was studied in 86 patients. The ratio of uterine length to cervical length was as follows : 58 patients showed a ratio of 2 : 1, while 28 patients showed a ratio of 2 : 1 or more.

SPECIAL :

Primary amenorrhoea—Out of 200 patients there were 21 cases of primary amenorrhoea. Of these 21 cases, 8 patients had absence of the uterus and the vagina. 7 patients had markedly hypoplastic uterus. These cases showed secondary sex characters corresponding to their hormonal functions. They are classified as under :

(A) Sexual infantilism (3 cases)—Under this group there was 1 case of possibly primary pituitary failure, 1 case of possibly primary ovarian failure, and 1 case of possibly thyroid deficiency.

(B) Hypogonadism (4 cases)—There were 4 patients with slight changes in the secondary sex characters at the age of 18.

(C) Normal secondary sex characters with amenorrhoea of uterine origin (10 cases)—Under this group there were 2 cases with uterus of subnormal size, later responding to oestrogen, 2 cases of hypoplastic uterus not responding to oestrogen, 2 cases with tuberculous endometritis, 3 cases with

atrophic endometrium and 1 case with proliferative endometrium.

(D) Obesity of hormonal origin (2 cases).
(E) Cryptomenorrhoea—atresia vagina (1 case).
(F) Agenesis of gonads (1 case).

In this last patient, though the skin biopsy showed male type of nuclear chromatin, the patient had complete absence of gonads of either sex.

The age of the primary amenorrhoea cases varied from 16 to 25 years as follows: 2 cases—16th year, 3 cases—17th year, 1 case—18th year, 2 cases—19th year and 13 cases—20th year and over.

Thus about two-thirds of the primary amenorrhoea cases were seen in their twenties. 5 of the patients with primary amenorrhoea were anaemic, two of whom were severely malnourished and markedly anaemic.

In 3 primary amenorrhoea cases whose genital organs were absent, the abdomen was opened to see the anatomy in the pelvis and kidneys. These cases are reported below:

Case Reports

Case 1—A woman aged 20 was seen in the O.P.D. of Chinai Maternity Hospital for primary sterility. She complained of pain in the abdomen for 2 days every month with vomiting.

She was of average height (5 ft.) and weight (82 lb.). Her secondary sex characters were normally developed. Systematic examination of the respiratory, cardiovascular, alimentary and central nervous systems showed nothing abnormal. She complained of spongy bleeding gums. There was excess of hair on her extremities and hair was scanty on the upper lip.

On vaginal examination the labia majora and minora were well developed; pubic hair was normal; vaginal pouch was deep and normal and small walnut-sized masses were felt in both fornices.

On rectal examination the uterus and cervix were not felt.

The patient was admitted for laparotomy.

On laparotomy there was no uterus, but it was represented by slight thickening of the medial ends of the rudimentary fallopian tubes joined together by a short transverse fold of peritoneum. Round ligaments were also poorly developed. Ovaries were hypertrophied and on section showed corpus luteum in various stages of degeneration.

This patient on discharge from the hospital was told to maintain a basal body temperature chart to see if she ovulated regularly. The chart did show ovulatory changes every month.

Case 2—A woman aged 20 was seen in O.P.D. of Chinai Maternity Hospital for primary amenorrhoea and dyspareunia. She was fairly built and well nourished. Her height was 56" and weight 70 lb. She gave history of bacillary dysentery a year before, otherwise she was normal. Secondary sex characters were normal.

On vaginal examination the hymen was intact; the labia majora and minora were well-developed; a small vulvar pouch was present.

On rectal examination no uterus or cervix was felt.

On laparotomy two ectopic kidneys were found on either side of vertebral column lower down. There was no uterus but two normal-sized ovaries were present. Rudimentary fallopian tubes were seen.

Case 3—A woman aged 19 was seen for primary amenorrhoea. She was of average height and weight and was in good health with normal secondary sex characters.

Vaginal examination revealed only a small vaginal ponch.

On rectal examination no uterus or cervix was felt.

On laparotomy an ectopic kidney was found lying in the midline near the brim of the pelvis. There was no uterus. Ovaries were of normal size. Rudimentary fallopian tubes were seen.

Reports of 7 primary amenorrhoea patients with hypoplastic uteri are given below:

Case Reports

Case 1—Patient aged 22 came with complaint of primary amenorrhoea. Her height, weight and span measurements were normal and her skeletal growth was also normal. On examination, hair on the pubic area was found scanty. Axillary hair follicles were few in number and breasts were not well developed.

On vaginal examination the vagina and vulva were normal; the uterus was very small and nodular with small cervix and without fornices.

Case 2—Patient aged 28 complained of primary amenorrhoea. She had a short stature and was of obese type. There was the male type of distribution of hair on the body and her voice was a little hoarse.

On vaginal examination the vagina and vulva were well developed; uterus, very poorly developed and the vaginal part of the cervix was not felt.

Case 3—Patient aged 26 having normal feminine structure complained of primary amenorrhoea.

On vaginal examination the uterus was found to be very small and acutely flexed; very little cervical tissue was felt in the vagina and the uterine sound could not be passed because of the pinhole os.

Case 4—Patient aged 25 came with complaint of primary amenorrhoea. Her skeletal growth and secondary sex characters were normal.

On vaginal examinal the vagina was narrow; uterus and cervix very small.

Case 5—Patient aged 23 complained of primary amenorrhoea. Her stature was small and obesity was marked in the lower abdomen. Breasts were well developed but nipples were not well formed. There was scanty growth of hair on the upper lip.

On vaginal examination the vagina was normal; the vaginal portion of the cervix was not felt and the uterus was found to be very small and retroflexed.

Case 6—Patient aged 20 complained of primary amenorrhoea. Her structure was small. Secondary sex characters were not well developed.

On vaginal examination the vagina was found to be very small; uterus was very small and anteflexed; and cervix was very small.

Case 7—Patient aged 24 with low grade of intelligence and normal secondary sex characters came with primary amenorrhoea. Her height, weight and span measurements were normal. Distribution of hair was more on the limbs.

On vaginal examination the vulva and vagina were underdeveloped; cervix small and conical; uterus small and retroflexed.

Two patients of primary amenorrhoea were found to have tuberculous endometritis. Both were married and came for primary sterility in addition to primary amenorrhoea. One of them had pulmonary tuberculosis also. Both the patients were in their twenties.

Secondary amenorrhoea—There were 20 cases of secondary amenorrhoea out of 200 patients who attended O.P.D. of Chinai Maternity Hospital. The term 'secondary amenorrhoea' was applied whenever there was amenorrhoea of duration 3 months or more after previous normal menstrual period. Of these twenty cases, 13 had primary ovarian hypofunction, 4 were cases with obesity of hormonal origin and 3 with anovulation.

All the cases of secondary amenorrhoea were thoroughly examined clinically and whenever indicated, pathologically and radiologically. In unmarried young girls, vaginal examination was not done but rectal examination was done and in such cases reports on endometrial biopsies were not available.

Thirteen cases of secondary amenorrhoea had varying degrees of hypofunction. Here the patients gave history of late menarche and irregular and delayed periods. The flow of menstrual blood was scanty and used to last for about two to three days. On vaginal examination the uterus was either retroflexed or anteflexed and very small. The general sexual development was poor in all cases.

Four cases of obesity were associated with secondary amenorrhoea, the duration of amenorrhoea varying from 3 to 8 months. The patients were less than 4'-11" in height and more than 140 lb. in weight. All of them were below 30 years of age. The distribution of fat was more marked on breasts and lower abdomen. Hair distribution was normal. All the patients were very fond of starchy and fried eatables. Milk was taken in negligible quantity. 2 of these cases showed an active proliferative phase of endometrium, anovulatory type.

Three patients in this group had ceased to ovulate. This was confirmed by basal body temperature charts. In all these patients endometrial biopsy showed an active proliferative endometrium in premenstrual phase of menstrual cycle. All the three patients responded to chorionic gonadotropin injections by getting normal periods.

Of all the patients of secondary amenorrhoea, 5 between the ages of 23 and 32 gave histories suggestive of a psychogenic factor responsible for secondary amenorrhoea. Of these, two were from the group of cases with primary ovarian hypofunction, two from the group with obesity of hormonal origin and one from the group with anovulation. The psychogenic factor was mainly some disturbed or distressing family condition.

Two patients of secondary amenorrhoea were markedly emaciated with flabby wrinkled skin, dirty and decayed teeth, and scanty axillary and pubic hair. The 17-ketosteroid excretion in these two patients was low. Both the patients belonged to the low-income group. One of them had to go without food very often due to want of sufficient food for the family. The other patient was a woman, Jain by religion, who observed fasts very often.

Endometrial biopsies were done only in 8 cases of secondary amenorrhoea. Results were as follows: Atrophic endometrium—2; inactive proliferative endometrium—5; no tissue obtained—1.

Laboratory investigations—R.B.C. count and Hb estimation in 20 patients showed hypochromic type of anaemia: Two patients had mild, 16 patients had moderate and 2 patients had severe anaemia.

Urine analysis was normal in all the 20 patients of secondary amenorrhoea.

Menstrual findings—The following points were noted, viz., the average age of menarche; symptoms associated with menstruation; length of menstrual cycle; duration of menstrual flow; amount of blood loss; and menorrhagia.

The average age of menarche in this group of cases was 14·9 years. This figure is a little higher than the average obtained in the general female population of this State. Obtaining of the actual date of menarche was a difficult problem because most of the patients were illiterate and did not know even their correct age. Only an approximate age was told in reply to our questionnaire. We have tried to correlate the events of the last menstrual period with some events in the family to minimise the error in getting the right age of menarche. The menarche was found to appear later in the ill-nourished and lower income group of patients. Patients married much before the average age of puberty gave history of early menarche.

The patients who were members of a big family had the menarche earlier than the average figure. In the present series, the earliest period was at the age of 11 years and six months.

The symptoms associated with menstruation are analysed as follows: Pain in the lower abdomen, before or during the first day of menstruation—138 cases; heaviness or discomfort in breasts—41 cases; feeling of exhaustion, headache or backache—42 cases; ulcers in the mouth in premenstrual stage—14 cases; blood-stained discharge in the intermenstrual period—9 cases; excessive leucorrhoea before and after menstrual discharge—92 cases; frequency of micturition in premenstrual period—27 cases.

Out of 208 patients, 160 complained of some sort of pain in the lower abdomen at some time or other of the menstrual cycle. Pain was referred to the lower limbs and back in most of the patients. Uneasiness and headache were accompanying symptoms in most of them. Pain just before the actual onset of menstruation and in the first few hours of onset was present in 77 cases (37 per cent); pain in the intermenstrual period in 22 cases (10·5 per cent); pain before menstruation in 61 cases (29·3 per cent); and there was no pain in 48 cases (23·2 per cent).

Most of these patients were sterile and had irregular type of menstruation and were of sedentary habits. Some patients had unhappiness in their domestic and sexual life.

The length of the menstrual cycle in the present series of cases of genital hypoplasia varied from 16 days to 8 months, but those complaining of amenorrhoea of more than 3 months, were included in the group of secondary amenorrhoea. The length of menstrual cycle varied in different communities (Table 1).

Menstrual cycle was longest in Bhaiya women who usually belong to the low income group and whose habits are sedentary. The average mean menstrual cycle was of 29 days as calculated from patients who gave history of regular cycles.

With regard to the duration of the menstrual flow, we have classified patients into three groups after taking into consideration the error on the part of patients in calculating the duration of flow in complete days:

(a) Those having menstrual bleeding for more than 6 days (long)—27 cases (12·5 per cent).
(b) Bleeding for 3 to 6 days (medium)—131 cases (62 per cent).
(c) Less than 3 days (short)—51 cases (24·59 per cent).

The idea of the amount of blood loss was obtained by asking the patients about the number of diapers used by them during a period. Of course, the number of diapers used depends not only on the blood flow but also upon the standard of cleanliness, sweating habits, and obesity. On an average 3 diapers were used on the 1st day of menstruation. The variation in the blood losses according to the community is shown in Table 1.

TABLE 1—SHOWING LENGTH OF MENSTRUAL CYCLE AND VARIATION IN THE AMOUNT OF BLOOD LOSS IN DIFFERENT COMMUNITIES

Community	No. of patients	Menstrual cycle (days)	Blood loss		
			Scanty	Moderate	Profuse
Gujarati ..	41	30·32	10	27	4
Muslim ..	35	28·40	10	18	7
Jain ..	24	29·35	9	10	5
Bhaiya ..	19	31·52	9	8	2
Scheduled class ..	49	27·10	8	37	4
Sindhi ..	15	27·10	3	11	1
Marathi ..	8	28·80	2	5	1
Other castes	17	29·42	3	12	2
Total	208		54	128	26
Percentage			26·3	61·3	12·3

Menorrhagia was found in 18 cases in this series of 208 cases of genital hypoplasia seen in Chinai Maternity Hospital. Organic causes like fibroids, polyps, cancer, endometriosis, etc., were excluded while selecting the patients for this study. The youngest patient in this series was 18 years and the oldest 32. Three of the patients were unmarried. The chief complaints were either menorrhagia, metrorrhagia or polymenorrhoea. A few had history of functional haemorrhages after marriage. On vaginal examination the uterus was found smaller in size than normal, its length varied from 1½" to 1-3/4" and it was either anteflexed or retroflexed. No other abnormality was found. The blood pressure determinations did not show any abnormality. R.B.C. count and Hb values in 18 patients showed varying degrees of hypochromic anaemia. Bleeding and clotting times were normal in all cases. 3 cases had Hb percentage below 40, 4 cases between 40 and 50 and 11 cases between 51 and 65.

The menstrual cycle in 18 patients were as follows: (a) Regular, normal (menstruation occurring regularly at 28-30 days' interval) in 2; (b) regular, short (menstruation occurring regularly at intervals of less than 21 days) in 4; (c) regular, long (menstruation occurring regularly at intervals of more than 31 days) in 3; and (d) irregular cycles bleeding occurring at irregular intervals lasting for varying duration) in 9.

Endometrial biopsies were taken premenstrually in the first three groups of cases and during menstruation in group (d). In group (d) proliferative phase of endometrium was more often seen. Proliferative phase with hyperplastic, cystic glands and condensed vascular stroma in 8. Proliferative phase with hyperplastic glands in 2; secretory phase with normal stroma in 5. No endometrial biopsy was taken in three unmarried patients.

All the patients complained of sterility and 50 per cent complained of irregular menstrual cycles. The patients in this series belonged to the educated class. Profuse bleeding followed a psychological shock, change of residence, etc., in a couple of patients. Three patients gave history of similar menorrhagia in their sisters who also were sterile.

Basal temperature records—Only 27 out of 250 patients could record their basal temperature. From these records only 8 cases of anovulatory bleeding were detected. They were confirmed by endometrial biopsy.

Endometrial biopsy—Endometrial biopsy was obtained in premenstrual phase in 47 patients. No endometrial tissue was obtained in 4 cases. The results of other cases (43) were as follows:

Secretory phase with inequality of glands, oedema, and tortuosity of some glands in 12; hyperplastic endometrium with scanty glands and poorly developed stroma in 24; proliferative phase of endometrium suggesting anovular menstruation in 7.

Total W.B.C. count—The total W.B.C. count was done on the first day of examination in those cases who complained of profuse leucorrhoea and some infection of the genital organs. It was done in 34 cases. The count was high (above 10,000/c.mm.) in those patients who had tenderness of uterus and appendages on vaginal examination. Weekly total W.B.C. count was done in 14 cases and there was increase in the number of total leucocytes, neutrophils, lymphocytes and monocytes during the follicular and leuteal phases of the menstrual cycle, which was followed by abrupt decrease during the bleeding phase.

Diet—On inquiry it was found that there was a great dislike on the part of women to take milk, which is the chief animal protein available in a vegetarian diet. This may be due to be following factors: (a) Most of the women cannot afford to take milk every day; (b) The habits of the family—as other members of the family do not take milk, women also do not take it. (The value of milk as food should be explained to women). (c) The tradition in the family—the girls are not supposed to take milk, only male members can take it. (This may be a result of the low income of the family). (d) Wrong dietetic habits—ladies relish fried and spicy dishes and they do not cultivate the habit of taking milk or any milk preparation in the early periods of their life. Hence they have no liking for milk at the time of puberty and in later life.

Family income—Inquiry was made about the per capita income of the family in every case. Most of the patients failed to answer this question because they had no knowledge of the income of the family. Besides they were not willing to give the exact figure, because they had come to the hospital for examination and guidance about their menstrual irregularities.

Most of the patients in the present series were living in joint family and so the income was divided between members of the family. Genital hypoplasia and aplasia were more marked in patients whose family income was low.

Race and community—The incidence of genital hypoplasia and aplasia was greater amongst Muslim and Bhaiya ladies. This may be due to their observing *purdah* and also because their marriages were confined to their near relations.

The patients who belonged to the Jain community more often complained of irregularities of the menstruation and sterility and their numbers were also high in our analysis. This may be due to the fact that they make less use of green vegetables and roots, and also because they frequently observe fasts.

Congenital malformations of the genital tract were found in 15 patients: Gonadal aplasia was found in 1 case; imperforate hymen in 1 case; atresia of vagina and cervix in 1 case; absence of vagina, uterus, etc., in 7 cases out of which three showed associated urinary malformations; double vagina and double uterus and cervix—uterus didelphys—in 2 cases; septate uterus in 1 case; uterus with rudimentary horn in 1 case and vaginal anus in 1 case.

Summary and Conclusions

The study revealed a high incidence of genital hypoplasia and aplasia in Muslims and Bhaiyas among whom consanguinous marriages are common. The onset of menarche appeared later in the poorer classes of patients, suggesting that malnutrition during the growing years may influence growth of the generative organs. Mumps during childhood did not appear to influence the onset of menarche.

Menstrual irregularities and dysmenorrhoea were found commoner in women faced with social handicaps and psychological difficulties. Tuber-

cular endometritis was a cause of primary amenorrhoea in 3 cases.

Ectopic kidneys were found in three cases of congenital absence of uterus and vagina. In one they were bilateral and in two unilateral—suggesting the frequent association of urinary and congenital genital anomalies.

The present study was conducted with students of Ahmedabad most of whom belonged to the city proper. So the climatic condition and its influence on the age of menarche was not studied. As most of the students belonged to Gujarat, the question of race influencing the age of menarche was not observed. Hereditary influence and its relation with the age of menarche were obtained in this analysis which showed that the menstrual period in the girls started at an earlier age than their mothers. No difference in the commencement of the menstruation was noticed in students of different ranks in the family, although some of the students who were the only children of the family had complaints about the menstrual periods.

Students who were brought up in higher income groups started the menstrual cycle at an earlier age than those who were brought up in poor families. This may be due to less nourishment or less facilities to fight against common infectious diseases which were likely to retard their normal growth and development.

No difference in the age of menarche was found in the various classes.

High schools and college girls—There was no significant difference noticed in the age of the students and their sisters.

The daily habits of life varied a great deal between the students of different classes of income and community. These may influence the age of menarche.

Primary dysmenorrhoea does not commence at the menarche but starts usually after the age of 18.

Estimation of the pain symptom is very difficult because of the psychological factor and criteria of discomfort. The incidence of dysmenorrhoea varies with age, occupation and social status, family environments and habits and hereditary conditions. Mental conditions make the dysmenorrhoea worse. Worries of examinations, change of occupation or house (hostel life from home life), previous illness, infectious diseases, etc., temporarily cause painful periods. The most fascinating and illuminating factor of the problem of dysmenorrhoea is its inseparability from psychological factors. The pain of menstruation is often less complained of when the same women go to the hospital for investigation.

The onset of dysmenorrhoea is often associated with change of work or environment. Primary dysmenorrhoea is almost invariably cured by deliveries. Primary dysmenorrhoea is often as much dependent on the structural defects in the uterus as it is on psychological factors directly or indirectly.

ACKNOWLEDGMENT

This work was supported by a grant from the Gujarat University. We take the opportunity to thank Dr. M. D. Desai, Director of School of Post-Graduate Medicine and Research and Superintendent of Sheth Vadilal Sarabhai General Hospital and Sheth Chinai Maternity Hospital, for giving permission to publish this paper. We also thank Dr. K. A. Shah, Medical Officer, Gujarat University, for his help in collecting the statistical data.

OBSERVATIONS ON THE THERAPEUTIC VALUE OF INTRAVENOUS B_{12} IN INFECTIVE HEPATITIS

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INTRODUCTION

Infective hepatitis usually runs a benign course. There is no specific therapy for this condition. Rest and diet are the mainstay in its management. The diet should be high in calories with good amounts of carbohydrate and protein.

Numerous drugs have been tried to modify the course of the disease and to promote early recovery. Crude liver extract was tried by Labby *et al* (1947) with no encouraging results. Campbell and Pruitt (1952) found intravenous administration of B_{12} helpful in improving the appetite and in reducing the size of the liver in infective hepatitis. Anorexia is an important symptom of the disease preventing maintenance of nutrition in such cases. Except Campbell's communication, no other report has been published regarding the exclusive use of intravenous B_{12} in infective hepatitis. These considerations stimulated us to try B_{12} in such cases and to evaluate its utility, if any.

MATERIAL AND METHODS

Twenty-six cases of infective hepatitis admitted to M.Y. Hospital, Indore, were selected for study.

* Read at the 36th All-India Medical Conference, Indore, December 1959.

These cases had no complications. Care was also taken that the duration of illness was nearly the same. Every alternate case was placed on intravenous B_{12} therapy, the others serving as control. The control group was given bed-rest with bath room privileges, and diet of *chhanah, dahi,* skimmed milk, sugarcane juice, glucose water, rice, and other items of diet were included as the appetite improved. They were also given vitamin B complex and vitamin C orally and 25 c.c. of 25 per cent glucose intravenously daily. The treated group was given all the above mentioned treatment and 100 μg. of B_{12} in 25 c.c. of 25 per cent glucose intravenously.

The details of the cases were recorded on a prepared proforma and the patients were closely observed clinically, with special reference to the feeling of well-being, appetite, jaundice, size and tenderness of the liver, vomiting and examination of the colour of urine and stool on alternate days. Liver function tests were performed in the beginning and at the end of three weeks. The cases were observed for a minimum period of three weeks and the findings were analysed.

Results

Table 1 shows the analysis of 13 cases in the control group (treated with bed rest and diet) and the grades of improvement in symptoms and in the liver function tests during the course of their stay in the hospital.

Table 2 shows an analysis of the cases in the

Table 1—Showing Analysis of the Control Cases

No.	Name, age (yr.), sex			Anorexia		Liver size		Jaundice		C.C.F		T.T. units		T.F.	
				B.T.	A.T.	B.T.	A.T.	B.T.	A.T.	B.T.	A.T.	B.T.	A.T.	B.T.	A.T.
1	D.,	25,	M	++	+	3F	1F	++	+	4+	—	6	—	4+	—
2	S.R.,	40,	M	++	N	JP	N	+	±	2¾+	2¼+	8	8	3+	2+
3	P.,	40,	F	+++	+	4F	2F	++	±	3¾+	2¾+	9	7	3¾+	3+
4	G.P.,	35,	M	+++	++	4F	1F	++	±	3+	—	8	—	4+	—
5	M.P.,	35,	M	++	+	2F	JP	++	±	2¾+	1¾+	8	6	2+	3+
6	V.H.,	30,	M	+++	+	1F	—	+	±	—	—	—	4	—	—
7	R.M.,	12,	M	+	+	1F	JP	+	±	3¾+	2+	5	—	3+	1¾+
8	M.D.,	20,	M	++	+	JP	JP	+	±	2¾+	1¾+	8	—	3+	2+
9	B.R.,	25,	M	++	+	JP	—	+	±	2¾+	3+	3	—	2¾+	3+
10	F.M.,	36,	M	+++	+	2F	JP	++	+	3¾+	2¾+	5	5	2¾+	3+
11	J.O.,	22,	M	++	+	1F	1F	+	+	3¾+	2¾+	5	5	3+	3+
12	B.V.,	17,	M	+++	+	3F	1F	+	±	3¾+	3+	7	5	4+	3+
13	R.S.,	24,	M	+++	++	JP	JP	++	++	3¾+	2¾+	6	4	3¾+	3+

B.T.—Before treatment, A.T.—After treatment. N—Normal. F—Fingerbreadth size. JP—Just palpable. ±—Doubtful.
C.C.F.—Cephalin-cholesterol flocculation test. T.T.—Thymol turbidity test. T.F.—Thymol flocculation test.

Table 2—Showing Analysis of the Cases Treated with I.V. Vitamin B_{12}

No.	Name, age (yr.), sex			Anorexia		Liver size		Jaundice		C.C.F.		T.T. units		T.F.	
				B.T.	A.T.	B.T.	A.T.	B.T.	A.T.	B.T.	A.T.	B.T.	A.T.	B.T.	A.T.
1	K.B.,	35	F	+++	+	2F	JP	+	—	2¾+	1¾+	6	3	4+	1¾+
2	S.L.,	18	M	+++	+	JP	—	+	—	2+	1¾+	4	3	2+	1+
3	G.L.,	16	M	++	N	2P	—	++	±	1¾+	2¼+	5	2	3+	3+
4	M.B.,	20	M	++	N	3P	2F	++	+	2¾+	2¾+	4	6	2+	4+
5	S.S.,	20	M	++	±	2F	2F	+	+	3+	2¾+	6	—	2+	1¾+
6	M.R.,	25	M	++	±	1F	—	+	—	2¾+	2¼+	4	5	4+	3+
7	L.R.,	30	M	++	N	3F	JP	+	±	3+	—	7	—	3¾+	—
8	D.C.,	18	M	+++	N	JP	—	++	—	4+	1¾+	6	5	2+	2+
9	P.V.,	25	M	++	±	2F	1F	++	±	2¾+	—	5	—	2¾+	—
10	M.N.,	13	M	++	N	2P	JP	++	—	4+	2+	9	5	2¾+	3+
11	B.L.,	24	M	+	±	1F	—	++	—	2¾+	2¾+	5	5	2+	2¾+
12	M.P.,	26	M	++	N	1F	—	+	—	—	1¾+	—	4	—	1¾+
13	S.R.,	29	M	+++	N	1F	JP	++	N	—	—	—	—	—	—

B.T.—Before treatment, A.T.—After treatment. N—Normal. F—Fingerbreadth size. JP—Just palpable. ±—Doubtful.
C.C.F.—Cephalin-cholesterol flocculation test. T.T.—Thymol turbidity test. T.F.—Thymol flocculation test.

TABLE 3—SHOWING IMPROVEMENT IN SYMPTOMS AND LIVER FUNCTION TESTS AFTER TREATMENT WITH VITAMIN B_{12}

			Improvement in symptoms									Results of liver function tests															
	No.	Duration of illness (days)	Anorexia			Jaundice			Liver size			Urine-uro-bilinogen			Icteric index			C.C.F.			T.T.			T.F.		
			–	+	++	–	+	++	–	+	++	–	+	++	–	+	++	–	+	++	–	+	++	–	+	++
Control cases	13	45·8	3	9	1	2	9	2	3	8	2	3	8	2	2	10	1	3	7	3	2	8	3	3	7	3
Cases treated with vitamin B_{12}	13	34·9	0	6	7	1	6	6	2	7	4	2	9	2	1	6	6	4	7	2	2	8	3	2	8	3
Total	26		3	15	8	3	15	8	5	15	6	5	17	4	3	16	7	7	14	5	4	16	6	5	15	6

– =No change. + =Slight to moderate improvement. ++ =Marked improvement. C.C.F.=Cephalin-cholesterol flocculation test. T.T.=Thymol turbidity test. T.F.=Thymol flocculation test.

treated group (treated with I.V. B_{12} in addition to the routine treatment) and the grades of improvement in the symptoms and in the liver function tests.

Table 3 shows the comparative results in the control and treated groups of cases. From the table it is clear that B_{12} remarkably improved the appetite in the treated series as compared with the control. Best improvement in appetite was seen in 7 out of 13 treated cases and in only 1 out of 13 control cases.

Jaundice also decreased faster in the treated group, 6 cases showing best results as opposed to only 2 in the control. The size of the liver, urinary urobilinogen and liver function tests (cephalin-cholesterol flocculation test, thymol turbidity test, and thymol flocculation test), however, do not show any appreciable difference.

DISCUSSION

Disturbances of B_{12} metabolism are known to occur in liver diseases. Animal experiments have shown that liver B_{12} is low in liver diseases. This is either due to dereased deposition of B_{12} or its increased excretion from the liver. Impairment of uptake of B_{12} by liver was noted in 2 out of 9 cases of infective hepatitis and complete loss of uptake in one case which reverted to normal after improvement of the liver function. There are many reports in the literature (Class *et al*, 1958; Sarin and Kaushic, 1957) which suggest that B_{12} has a direct influence on the recovery process. It has been found that B_{12} has significant lipotrophic activity in rats which are maintained on low protein and low fat diet (Class *et al*, 1958; Sarin and Kaushic, 1957). Campbell and Pruitt (1952) from their study of effect of intravenous B_{12} in infective hepatitis demonstrated that it brought about rapid return of appetite and of liver size to normal; the serum bilirubin returned to normal earlier (i.e., in 10 weeks as compared to 18 weeks in the control); and the mean duration of illness was also reduced (i.e., 48 days as compared to 54 days in the control).

Observations in the present series confirm the findings of the above workers. Anorexia, which is the most important and distressing symptom, is the one which is most favourably influenced by intravenous B_{12} (Table 2). Thus the earlier return of appetite and the improved liking for food increase nourishment and thus secondarily enhance recovery. The jaundice also decreases faster in the trial cases (Table 3).

The earlier return of the size of the liver to normal as shown by Campbell and Pruitt (1952) is not borne out in our series.

The mean total duration of illness in our cases is 45·8 days in the control and only 34·8 days in the treated group. This points to the duration of illness being reduced and thus the recovery is hastened.

Liver function tests, however show practically no change in either group of our cases. It is difficult to explain this disparity between remarkable improvement in subjective symptoms and no change in the liver function tests.

For introduction of any drug in the therapy of infective hepatitis, the preparation should have one of the two pre-requisities. It should ameliorate effects of the disease procss or improve the patient's sense of well-being, so that the process of recovery is secondarily stimulated. B_{12} intravenously administered certainly satisfies the latter criterion and thus it is a useful adjunct to

the non-specific routine therapy of infective hepatitis.

Summary and Conclusion

Twenty-six cases of infective hepatitis were studied, out of which 13 formed the control and 13 were treated with intravenous B_{12}. Anorexia and jaundice responded favourably to this therapy. However, the liver function tests remained unmodified.

The value of intravenous administration of B_{12} in the therapy of infective hepatitis is definite with regard to improvement in appetite and to some extent of jaundice and in secondarily enhancing recovery and in reducing the period of illness.

Acknowledgments

We are grateful to Dr. B. C. Bose, Principal, M. G. M. Medical College, and Dr. R. Bhattacharya, Superintendent, M. Y. Hospital, Indore, for allowing us to carry out this investigation. To Dr. S. K. Mukerji, Professor Emeritus in Medicine and Dr. Akbar Ali, Professor and Head of the Department of Medicine, M. G. M. Medical College, Indore, we are indebted for their constant encouragement and valuable suggestions. We are also thankful to M/s. Unichem Laboratories, Private, India, Ltd., for their generous supply of B_{12} for this study.

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TETANUS FOLLOWING INTRAMUSCULAR INJECTION

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It is unfortunate that parenteral therapy has sometimes been associated with certain complications. Some of these are inherent with the use of particular drugs, and some are due to lack of proper precautions. Necrosis of tissues is an example of the former and secondary infection of the latter. Parenteral therapy has now become so popular that even medical auxiliary personnel (e.g. dispensers, pharmacists, R.M.P.'s, etc.) who do not possess a proper concept of potential dangers involved often resort to this form of therapy. The patients usually escape any serious complication. Often the complications are too trivial to be worried about. But the risk is not insignificant because the deadly disease, tetanus, may develop after an injection. Tetanus may develop after an injection for the most trivial complaint for which the injection was perhaps unnecessary, and oral therapy could have been as good.

During a period of 4 years between November 1954 and October 1958, 2007 cases of tetanus were admitted in the King Edward Memorial Hospital, Bombay, out of which 32 cases of tetanus followed one or the other injection. Thus 1·594 per cent of all cases of tetanus admitted to the hospital were due to injection. The only available history of injury in these cases was that they had received one or more intramuscular injections. Tetanus following injection was usually severe (Table 1), as will be evident from the grading previously described by Patel and Joag (1959). The high mortality rate of the cases is evident from Table 2.

Table 1—Showing Incidence of Tetanus according to Grades

Grades	Tetanus in general		Tetanus following injection	
	No. of cases	Incidence %	No. of cases	Incidence %
I	211	10·51	0	0
II	264	13·15	0	0
III	407	20·23	4	12·50
IV	645	32·14	10	31·25
V	480	23·97	18	56·25

Table 2—Showing High Mortality Rate from Tetanus according to Grades

Grade	Tetanus in general			Tetanus following injection		
	Recovered No. of cases	Died No. of cases	Mortality %	Recovered No. of cases	Died No. of cases	Mortality %
I	211	0	0	—	—	—
II	247	17	6·4	—	—	—
III	300	107	26·3	1	3	75
IV	282	363	56·3	1	9	90
V	80	391	81·5	3	15	83·3
Total	1129	878	43·7	5	27	84·4

TABLE 3—SHOWING THE ANALYSIS OF CASES OF TETANUS IN RELATION TO DIFFERENT DRUGS INJECTED

Drugs injected	No. of cases
Irgapyrin	15
Butarin	2
Ossadrine	1
Quinine & irgapyrin	1
Vitamin B-complex	2
Liver extract	1
Emetine	1
Quinine	1
Benapen	1
Unknown	7

Information regarding the nature of injection was obtained from the general practitioners giving the injection, and is given in Table 3. In seven patients this information could not be obtained. In most cases only one injection was given, in six cases 2 or more injections were given in a general hospital in Bombay city.

Special care was taken to obtain a detailed history and a thorough clinical examination was carried out to exclude the possibility of any other source of infection and to make sure that entry of infection was through the site of the injection.

CASES AND TREATMENT

Out of 32 cases who developed tetanus after intramuscular injections, 27 ended fatally. One patient died on the seventh day. She suddenly developed pain in the precordium, had nausea and profuse sweating, and expired within 15 minutes. Her blood pressure was 90/60 mm. Hg. (The previous record of her blood pressure was not available). The cause of death was probably myocardial infarction or pulmonary embolism. Autopsy was not done. Even if this case is excluded from the fatal cases, the mortality rate of the series is quite high (81·25 per cent). It will be evident from Table 2 that the mortality rate of the whole series (2007 cases) is 43·7 per cent and that following injection is nearly double this figure.

It will also be observed from Table 1 that cases of tetanus developing after injections are more severe; generalised severe spasms and laryngeal spasms are more frequent and less amenable to sedative drugs even in very large doses. Tracheostomy had to be performed in three cases—2 of these died due to central respiratory failure, and the third developed pulmonary oedema and died. Although the results of tracheostomy in this series did not differ from that in general tetanus, the results were equally unfavourable.

Cortisone is generally beneficial in tetanus, but it did not yield as good results in these patients. In the general series we have noticed marked improvement following steroid therapy. Nevertheless, as a majority of cases developing tetanus after injection was severe, cortisone was given to most of them. All the cases that recovered had cortisone therapy and those few cases that did not receive cortisone ended fatally. The general treatment of tetanus was the same in both the groups.

DISCUSSION

The introduction of tetanus organisms in the tissues and a suitable anaerobic environment for their growth are the two basic conditions that must be fulfilled for tetanus to develop. Both of these conditions occur when an irritant drug is injected intramuscularly without proper aseptic precautions. The source of tetanus bacilli gaining entry into the tissues is intriguing. It could be any one of the several possibilities:

(a) The skin of the patient may be harbouring spores or organisms which are carried along the needle track. It is virtually impossible to sterilise the skin completely before an intramuscular injection. (b) The frequency with which a general practitioner administers intramuscular injections gradually leads him to carelessness in taking adequate precautions. (c) Autoclaving of the syringe is necessary to eradicate spores of *Cl. tetani*, but this is hardly a practical proposition for a busy general practitioner. Needles or syringes can be a fruitful source of tetanus. Cotton swabs used to clean the skin can also leave behind some organisms or spores which can be carried into the body by the needle prick that follows. (d) There is a possibility, though remote, that the drug in the ampoule may itself be the source of infection. As tetanus develops sometime after the injection, the possibility of investigating the source of infection by bacteriological study is practically impossible. Such investigations could have provided very enlightening information, and could have been used to prevent this unfortunate complication.

No matter how the infection is introduced, there is no doubt that the growth of the organisms

in the tissues is facilitated by the necrosis caused by the drugs. It is well-known that injections of drugs like quinine and emetine have produced tetanus. Careful review of the literature shows that no other drug has been incriminated. The drugs employed for injection in our series (Table 3) are known to be tissue irritants, with the exception of vitamin B-complex. Irgapyrin, butarin, ossadrine, quinine and emetine are known to cause necrosis of the tissue at the site of injection. But, till now, no case of tetanus following injections of irgapyrin, butarin and ossadrine has been reported. The necrosed tissue lying deep in the gluteal region provides ideal anaerobic surroundings for the growth of *Cl. tetani*. It provides an ideal medium, somewhat akin to Robertson's cooked meat. In the series of of 32 cases, 13 showed definite induration at the site of injection. In 5 there was frank abscess which required free incision and yielded thick, brown, foul smelling fluid.

Prevention of this complication rests entirely with the general practitioners. Tetanus after an injection should be regarded as an index of carelessness. Injections should not be administered without proper and thorough aseptic precautions, specially when the drug is known to be highly irritant. As far as possible, injection of highly irritant drugs should be avoided, and wherever possible, oral therapy should be subsituted. We would also emphasise the need for using tincture iodine for sterilising the skin, instead of spirit.

Summary

Thirty-two cases of tetanus following intramuscular injections are presented. They comprise 1·594 per cent of total cases admitted for tetanus.

The relative frequency caused by drugs injected is described. It is noteworthy that injection of irritant drugs was found to be the incriminating cause.

Sources of infection are discussed.

Tetanus following injection tends to be more severe and mortality is almost double (84·4 per cent) than that in the general series (43·7 per cent).

The role of tracheostomy and steroid therapy is discussed.

Acknowledgment

We thank the Dean, King Edward Memorial Hospital, Bombay for facilities of work and publication.

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FALLACIES IN THE DIAGNOSIS OF BONE TUMOURS*

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The purpose of this short paper is to convey the lessons learnt form the mistakes committed in the diagnosis of some of the bone tumours. Detachment and dogmatism have never paid dividends in clinical medicine or surgery ; and least of all in a vast subject like tumours of the bone. In a field where a mistake may mean the loss of a limb or the waste of valuable time in the eradication of a malignant tumour of the bone, it is essential that the efforts of the clinician, the radiologist and the pathologist be co-ordinated and integrated. To arrive at a definite diagnosis a well planned and systematic approach is essential.

There are two types of fallacies that hamper the correct diagnosis of a tumour of the bone, viz., the fallacy of (1) under-estimating, and (2) over-estimating the nature of the tumour. The terms are self-explanatory and both types are equally dangerous. In the former a much more serious lesion such as an osteogenic sarcoma, Ewing's tumour or a chondrosarcoma requiring urgent therapy is often mistaken for a seemingly innocuous case of osteomyelitis and the serious lesion is permitted to progress rapidly under so-called 'antibiotic cover'. Each day, each week that is lost reduces the chances of a cure. On the other hand, the dangers of over-estimating the gravity of the lesion are equally bad or probably even worse, as they often lead to unneceessary sacrifice of useful limbs.

In an institution devoted to the study and management of neoplastic diseases one can hardly afford to neglect the relatively rare tumours which have, of late, been recognised as definite clinical entities. This fact assumes significance when one realises that these are precisely the cases where mistakes are likely to be made and the limb unnecessarily sacrificed. The relative rarity of neoplasms like the benign chondroblastoma, benign osteoblastoma and chondromyxoid fibroma should not lull one into a complacent disregard for them, because anyone dealing with tumours of the bone must be prepared to interpret and manage any lesion he encounters. One cannot ignore even the more complicated ramifications of a useful classification, because he cannot expect to diagnose and treat correctly a tumour with which he is unfamiliar. It has truly been said that only out of sound theory does successful practice emerge.

* Read at a meeting of the Indian Medical Association, Bombay branch, February 1960.

The surest way to meet such fallacies is to have a positive histological diagnosis before a definite line of treatment is planned. A pathologist who intelligently reviews the clinical history, the roentgenographic fidnings and the histology of the tumour is of the greatest help for correct assessment and evaluation of a case. It should be the rule to have a positive proof, and the histological diagnosis is the 'final court of appeal', so to say. For, a lesion of myositis ossificans at the height of its activity may appear ominous enough cytologically to suggest osteogenic sarcoma but only in the absence of the history and the location of the mass outside the contiguous bone. One cannot always insist on a biopsy for palliative irradiation of an advanced case in an inaccessible site.

It has been said that too much emphasis has been placed on roentgen diagnosis of bone tumours. But it should be realised that there are no fixed formulae for the roentgen diagnosis of these tumours, and most of the allegedly pathognomonic signs, which sometimes prove helpful, are often fallacious. One need only view the Figs. (*vide* Plate) with care to realise that the so-called 'sun-ray' and the 'onion-peel' effects and the 'soap-bubble' appearance cannot be said to be typical of osteogenic sarcoma, Ewing's or giant cell tumour respectively.

Far from underestimating the value of x-ray examinations in the diagnosis of bone tumours, this communication emphasises that dogmatism is not conducive to progress. X-ray examinations often supply practically conclusive evidence of the malignant or benign nature of bony lesions. The roentgenogram may be considered part of the gross pathologic picture, delimiting the part of the bone affected and in a large measure, the extent of the disease. The pathologist responsible for the diagnosis of osseous lesions handicaps himself immeasurably if he ignores their roentgenographic features. Such features provide a useful guide for diagnosis of the proper site of the biopsy.

A few words on the technique and the advantages and disadvantages of a biopsy, would not be out of place. For the patient, it is indispensable and for the physician it is not merely a scientific curiosity, but an obligation. It is imperative that biopsy be carried out with precision as on it rests the final therapeutic attack. Two methods are in common use: (1) The needle biopsy (aspiration biopsy) and (2) the formal biopsy. The needle biopsy is very quick, and can be performed in the consulting room or in the outpatients department. In large clinic populations with few hospital beds it has become a necessity. But it would be most unwise to depend on an equivocal pathological diagnosis obtained by needle aspiration. It is true that in advanced tumours which are soft and diffluent, involving the soft tissues, needle biopsy will give fairly accurate results. But in early cases tumours which have failed to involve the cortex and in cystic lesions of the bone, needle biopsy is hopelessly inadequate.

The word 'aspiration' biopsy often wrongly conveys the impression that only a smear on a slide is made. Far from this, a properly performed 'aspiration' biopsy almost always yields a plug of tissue, which is as good as a formal biopsy specimen, and from which a paraffin section could be prepared. With 15 years' experience at the Tata Memorial Hospital we have never seen any harm result from an aspiration biopsy. Lichenstein (1959) speaks thus of needle biopsy: "It is like riding a bicycle with both the hands tied behind; it is a good trick so long as you get away with it, but if you hit an obstacle, you are apt to fly over the handlebars and break your neck."

A 'formal' biopsy ('open' biopsy or 'incisional' biopsy), on the other hand, entails a surgical operation in itself. This is not entirely immune from all risks even for experts. However, in a carefully executed open biopsy the risks are negligible. The main arguments against open biopsy are (1) increased chances of dissemination, (2) fungation of tumour mass through the operation wound and (3) uncontrollable haemorrhage from vascular tumours. To safeguard against these the following precautions are taken:

(1) A small incision, as far as is permissible, (2) perfect haemostasis and gentle handling, and (3) proper suturing of the tumour capsule, if any, and the connective tissue capsule and the layers of the wound, e.g., deep fascia in the thigh.

The use of cautery (mild enough to spare the biopsy specimen) and the proximal tying of a tourniquet have often been in use to prevent chances of dissemination. We feel, that with due precaution, the dangers from an open biopsy are more theoretical than practical. Open biopsies should be performed with great precision and precaution, lest the theoretical dangers far outweigh the advantages.

Conclusion

As a basis for diagnosis one must think in terms of the actual pathological lesion present. Any attempt to operate without considering the pathological condition is fraught with danger. Roentgenographic interpretation has its inherent limitations. A radiologist or a surgeon may not have the good fortune, to encounter a bona-fide osteoid osteoma in his personal experience and so such a lesion is liable to be missed. The basic principle should be to verify roentgen diagnosis of skele-

Fig. 1A—Showing x-ray picture typical of Ewing's tumour of the forearm

Fig. 1B—Showing marked improvement in the Ewing's tumour (Fig. 1A) after antibiotic therapy

Fig. 2B—Showing typical x-ray picture of osteogenic sarcoma (see also Fig. 2A). Note 'sun-ray' effect and new bone formation

Fig. 3—Showing x-ray picture of swelling in the left upper thigh, revealing rarefying osteitis

Fig. 4—Showing x-ray picture of the knee region, revealing rarefying osteitis

Fig. 5—Showing x-ray picture which was initially wrongly diagnosed as osteofibroma

Fig. 6—Showing classical x-ray picture of chondrosarcoma, with spotty calcification and a soft tissue mass

Fig. 7—Showing x-ray picture of a lesion having mixed characters of Ewing's tumour ('onion-peel' effect) and osteogenic sarcoma ('sun-ray' effect)

Fig. 8—Showing classical x-ray picture of adamantinoma of the mandible

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tal lesions by tissue examination before one proceeds with definite treatment whatever it may be.

ILLUSTRATIVE CASE NOTES

Case 1—A girl, aged 9, came with a swelling of the forearm, with pain and fever of 2 months' duration. X-ray picture (Fig. 1A, *vide* Plate) is typical of Ewing's tumour. Repeated biopsies showed only inflammatory tissue. A marked improvement was noted after antibiotic therapy (Fig. 1B, *vide* Plate). The patient is alive and well 12 years later.

Case 2—A male, aged 23, came with a swelling in the upper part of the right leg for 6 months (Fig. 2A). The x-ray (Fig. 2B, *vide* Plate) was typical of osteogenic sarcoma, showing 'sun ray' effect and new bone formation. Biopsy failed to reveal any evidence of malignancy. Inflammatory lesion was present. Treated with antibiotics. The patient is alive and well 11 years later.

FIG. 2A—SHOWING TYPICAL OSTEOGENIC SARCOMA IN THE UPPER PART OF THE RIGHT LEG

Case 3—Male, aged 29, came with pain and swelling in the left upper thigh for 3 months. Radiography (Fig. 3, *vide* Plate) revealed rarefying osteitis and chronic inflammatory lesion. Biopsy showed chondrosarcoma. Hemipelvectomy was performed.

Case 4—A male, aged 26, came with persistent ache in the knee region. Radiography (Fig. 4, *vide* Plate) showed a rarefying osteitis and chronic inflammatory lesion. Biopsy showed malignant giant cell tumour. Disarticulation at the hip was performed. The patient is alive and well 4 years later.

Case 5—Boy, aged 15, misdiagnosed initially as osteofibroma (Fig. 5, *vide* Plate) roentgenologically and fibrous dysplasia pathologically. Repeat biopsy 9 months later revealed parosteal osteogenic sarcoma. Disarticulation of the hip was performed.

Case 6—This was a classical picture of chondrosarcoma (Fig. 6, *vide* Plate) with spotty calcification and a soft tissue mass. Biopsy showed osteogenic sarcoma.

Case 7—This case showed a lesion having mixed characters of Ewing's tumour ('onion-peel' effect) and osteogenic sarcoma ('sun-ray' effect) (Fig. 7, *vide* Plate). The final histological diagnosis was chondrosarcoma.

Case 8—This was a classical picture of an adamantinoma of the mandible (Fig. 8, *vide* Plate). Mandibulectomy was performed. Final histological diagnosis was metastatic carcinoma of the thyroid. Very careful examination revealed a tiny nodule in the thyroid, whose removal was refused by the patient. The presenting symptom in this case was swelling of the jaw.

REFERENCE

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PRACTITIONERS' SERIES

ANTIBIOTIC THERAPY : DIFFICULTIES AND DRAWBACKS

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Calcutta

Penicillin introduced in 1942 has been followed by the discovery of more than eighteen allied products, all of which are currently used and are known as antibiotics. Chemotherapy in bacterial infections had already been made possible with the introduction of the sulpha drugs. But antibiotics which are considered safer for administration have enabled us to control a larger field. In course of these years of therapy with antibiotics it has been revealed that what we thought had solved the problem of bacterial infection has rather created new ones instead. Newer knowledge and wider experience have focussed our attention to the difficulties and drawbacks of antibiotics and warnings have been issued against the indiscriminate use of antibiotics and advice has been given as to what has to be done in case such hazards are confronted.

HAZARDS OF ANTIBIOTIC THERAPY

The hazards of antibiotic therapy may be summarised as follows: (1) emergence of bacterial resistance to the antibiotics; (2) untoward gastrointestinal reactions; (3) development of blood dyscrasias; (4) untoward neurological reactions; (5) renal injury; and (6) allergic manifestations.

1. *Emergence of bacterial resistance*—Bacterial resistance against penicillin has naturally developed to a greater extent since this antibiotic was the first to be introduced, most widely administered and unfortunately in many cases indiscriminately used to treat many types of infections. The emergence of resistance has been particularly observed with staphylococci (aureus and albus) and marked particularly in hospitals and closed communities. 60 to 80 per cent of such flora have been reported to have developed resistance to penicillin.

As a result of wide use of streptomycin and dihydrostreptomycin, resistant strains have emerged not only among *M. tuberculosis* and some

gram-negative bacilli but also among some strains of *Staph. aureus* and *S. faecalis* for the treatment of which these antibiotics have been prescribed.

The broad-spectrum antibiotics, chloramphenicol and the tetracyclines, which have mainly been used to control pathogenic intestinal micro-organisms as well as penicillin-resistant streptococci and staphylococci, also bring about resistance. But the degree of refractoriness in these cases is not of the quality as has been observed with the other two antibiotics. It is also reported that resistance develops more slowly with the broad-spectrum antibiotics. However, micro-organisms which show resistance to one of the tetracyclines invariably manifest cross-resistance with the different cogeners. The tetracycline-resistant gram-negative organisms show significant cross-resistance to chloramphenicol—however it is not so with the gram-positive flora. It is also gratifying to note that development of resistance in *S. typhi* and the rickettsias against chloramphenicol is rarely seen in clinical practice.

Erythromycin has almost the same spectrum of activity as penicillin, specially as far as the gram-positive group of organisms is concerned. It is equally effective against both penicillin-sensitive as well as penicillin-resistant strains of staphylococci and is also active against some of the gram-negative bacteria which have developed resistance to streptomycin. Bacterial resistance develops as a result of the clinical use of the antibiotic and this is particularly observed among *Staph. aureus* against which it is frequently employed. There is however no cross-resistance between erythromycin and the other antibiotics.

Neomycin has been advocated for use for its antibacterial action on the intestinal flora as well as for topical application in skin infections. It has mainly replaced the tetracyclines which often cause unfavourable gastro-intestinal symptoms. Although bacterial resistance to the drug can be produced *in vitro*, in clinical practice the emergence of resistance strains has not so far been observed.

Bacitracin, polymyxin B, oleandomycin, novobiocin, vancomycin, ristocetin and kanamycin were discovered principally to control the penicillin-resistant staphylococci and micro-organisms rendered resistant to other antibiotics. The newer antibiotics are generally effective against the gram-positive organisms, though some have restricted activity also on some gram-negative bacteria such as the haemophilus and the clostridium. Almost all are active against staphylococci and streptococci otherwise resistant to penicillin, streptomycin, chloramphenicol or the tetracyclines. Strains have developed resistance, although less frequently, against these antibiotics during therapy, and cross-resistance has rarely been observed. Vancomycin, ristocetin and kanamycin, not yet introduced here, should be tried when organisms prove refractory to other antibiotics. Kanamycin has a wider spectrum and no cross-resistance to kanamycin with any other antibiotics has been reported.

The problem of emergence of strains resistant to antibiotics has not been seriously considered in this country. Perhaps it has also not attained such dimensions as in the western countries. However, in urban areas such strains are being encountered and they may in the near future pose a problem for the practising doctor. Unless screening tests are done as a matter of routine, especially in hospitals, the detection of resistant strains would be left to chance and much valuable time might be lost to switch over to the desirable antibiotic in cases where the mere time factor might save a life.

2. *Untoward gastro-intestinal symptoms*—Almost all the orally administered antibiotics tend to cause gastro-intestinal symptoms with massive doses or when continued for a long period.

Chloramphenicol and the tetracyclines may cause nausea, vomiting and epigastric distress. With some patients angular stomatitis, atrophic and hypertrophic glossitis, black hairy tongue or sore throat may be observed. Besides these, more serious symptoms may be encountered, such as flatulence, large bulky stools or even diarrhoea. These symptoms are due to effective suppression of the normal intestinal flora. Whea however superinfection by other organisms, e.g., yeasts, monilia or enterococci takes place, severe gastro-enteritis may result, ahd with staphylococcal invasion the patient may suffer from fulminating toxic enterocolitis which has in many cases ended fatally. Erythromycin, neomycin, oleandomycin, novobiocin and kanamycin, which are orally administered, have also been reported to have caused mild gastro-intestinal symptoms specially with large dosage over long periods. Mild oesophagitis may develop during oleandomycin therapy.

3. *Blood dyscrasias*—Penicillin has never been reported to cause haematopoietic disturbances. With streptomycin a few cases have been recorded where granulocytopenia or aplastic anaemia had developed. Major blood dyscrasias have been more commonly associated with chloramphenicol. Bone-marrow injury is the major toxic effect and thrombocytopenia, granulocytopenia and aplastic anaemia cases are commoner with chloramphenicol than with any other antibiotic. The injury in some cases is irreversible. Fortunately the other broad-spectrum antibiotics, the tetracyclines, do not cause such haematopoietic disturbances. Of

the newer antibiotics tyrothricin and its two principal constituents, gramicidin and tyrocidine are potent haemolytic agents and should never be given by a route enabling the antibiotic to come in contact with blood vessels. With novobiocin therapy, a yellow discoloration of the plasma might be noticed. This is perhaps due to a metabolic product of the drug.

Ristocetin has sometimes been reported to have caused leucopenia, neutropenia, thrombocytopenia or eosinophilia, either alone or in combination. Mild eosinophilia has also been reported with some patients undergoing treatment with kanamycin.

4. *Neurological disturbances*—Streptomycin and dihydrostreptomycin are neurotoxic antibiotics. Their main danger in prolonged therapy is damage to the vestibular or the eighth cranial nerve, resulting in labyrinthine and vestibular disturbances or at times in auditory impairment. Such disturbances have been detected among 60-70 per cent of patients who have been given 2 g. daily of the antibiotic over prolonged periods (60-120 days). With lesser doses a smaller percentage of patients is involved. The initial symptoms may be moderately intense headache, followed by nausea, vomiting and equilibratory difficulty. Within a few days this may lead to vertigo on standing and a feeling of difficulty in sitting and standing without visual clues. With some patients focussing of eyes and reading may be difficult and there may be nystagmus. The Romberg test is positive, and if the condition further deteriorates, the patient may develop ataxia. If the eighth cranial nerve is involved there may be disturbances of hearing. High-pitched tinnitus is often the first symptom to forecast the impending trouble, and loss of hearing follows this prodromal stage. Labyrinthine disorders are however more commonly seen than the eighth cranial nerve damage. Dihydrostreptomycin also causes vestibular and auditory damage, but such disturbances are usually more frequent, more severe and earlier in onset with streptomycin than with dihydrostreptomycin. The latter antibiotic is less toxic to the vestibular mechanism and more toxic to the auditory system.

Large doses of polymyxin B may cause incoordination of movements, ataxia, dysarthria and dyssynergia. Such doses given parenterally can cause paraesthesia, hyperaesthesia of the extremities and face, or weakness and slight vertigo.

Neomycin has been reported to cause occasional damage to the eighth cranial nerve followed by auditory disturbances. Tinnitus and a peculiar feeling in the sensation of taste may sometimes be noticed among patients treated with bacitracin. Decreased auditory acuity has also been observed at times with patients undergoing treatment with very high doses of vancomycin and kanamycin.

5. *Renal injury*—Some antibiotics are nephrotoxic, but, fortunately none of the major antibiotics—penicillin, streptomycin, dihydrostreptomycin, chloramphenicol or the tetracyclines.

Bacitracin, systemically administered may cause tubular damage to the kidneys. With polymyxin B and neomycin, if the total parenteral dose exceeds the usual therapeutic dose level, both tubular and glomerular damage to the kidneys may take place and urine may show albumin, R.B.C., leucocytes, and occasionally granular casts.

Kanamycin may also produce cylindruria, occasional albuminuria and even sudden oliguria.

In all cases with previous history of renal damage, antibiotics like streptomycin and dihydrostreptomycin should be given very carefully, and urine should be examined regularly to detect sudden deterioration of the condition.

6. *Allergic manifestations*—Almost all antibiotics are potential sensitising agents. Even penicillin, considered one of the safest, has been responsible for various allergic reactions. Drug fever associated with chill, rigor and rise of body temperature may follow injections of penicillin, streptomycin, dihydrostreptomycin, chloramphenicol or the tetracyclines. Other manifestations following parenteral or oral therapy include skin reactions which may be diffuse, papular, urticarial, erythematous or exfoliative. There may at times be swelling of joints and myalgia ; in some cases angioneurotic oedema, periarteritis nodosa or even asthma-like symptoms. In all cases there may be associated increase of eosinophils. Contact dermatitis may occur from topical application, e.g., ointments, dental cones, ear drops, etc. and has been noticed among those who frequently handle these drugs. In case of hypersensitivity to tetracyclines cross-sensitisation between cogeners has been observed.

Erythromycin, polymyxin B, neomycin, bacitracin and oleandomycin rarely cause allergic reactions. Maculopapular eruptions may sometimes appear with ristocetin. Novobiocin may bring about general morbilliform eruptions or diffuse scarlatiniform erythema involving the trunk, face and extremities. Vancomycin may also cause drug fever, urticarial eruptions or macular rashes. Skin rashes of the maculopapular type occur at times during treatment with kanamycin. Penicillin, specially procaine penicillin, may precipitate severe allergic reactions, and symptoms of shock associated with vasomotor failure, respiratory distress or dyspnoea which may ultimately end in death. Both penicillin and procaine have been

held responsible. Sometimes Herxheimer-like reaction may occur when syphilitic patients are treated with penicillin. The reaction usually occurs after the first injection and not after the subsequent ones. It is usually characterised by chill, rise of temperature to 103°-104°F, general malaise and muscular aching. In the chronic syphilitic these may be followed by severe reactions occurring at the site of lesions, such as sudden rupture or closure of arteries, resulting in haemmorhage from aneurysms, cerebral haemmorhage or thrombosis, etc. In pregnant syphilitic women, uterine cramps, haemorrhage or abortion may take place. In other cases optical damage or psychological symptoms, such as mild mental confusion, mania, hallucinations, have been reported. Severe allergic reactions and anaphylactic shock, fortunately extremely rare, usually end fatally.

Accidental introduction of oily repository penicillin in the vein may cause severe and even fatal reaction due to pulmonary lipid embolism.

Prevention and Treatment

1. *Emergence of resistant strains*—Indiscriminate use of antibiotics and administration of subtherapeutic doses for prolonged periods have been considered factors which help the development of resistance. Antibiotics should, therefore, be chosen after proper assessment of the nature of the infection and possibly after identification of the flora. This can be done by a preliminary screening test. If the antibiotic indicated can be ascertained, proper therapeutic doses should be given without hesitation. With proper therapeutic doses there should be no risk.

Alternately, the usual practice today is combined therapy. The combination may be between antibiotics or between chemical agents and antibiotics. Antibiotics should be so chosen as to yield synergistic effect, mere additive action does not help. In severe staphyloccocal infections, penicillin may be combined with other antibiotics known to act on the particular organism. A scheme for combining penicillin with other antibiotics has been presented. The antibiotics are divided into two major groups:

Group I—Penicillin, streptomycin, bacitracin and neomycin.

Group II—Tetracyclines and chloramphenicol.

Combinations of drugs from group I are frequently synergistic with each other and never antagonistic. Those from group II are usually additive, never synergistic or antagonistic. Combinations of antibiotics from both groups behave differently according to circumstances. If the organism is highly susceptible to group I drugs, antagonism may result. If it is highly resistant to group I drugs, synergism may result.

When penicillin-resistant staphylococci are encountered during practice, some of the newer antibiotics, e.g., tyrothricin, erythromycin, ristocetin or kanamycin may be tried. Unfortunately some of them are not available at present in this country. They should be made available. Sometimes combinations of antibiotics with sulpha drugs can also effectively control penicillin-resistant staphylococci and streptococci.

Development of resistance to streptomycin and dihydrostreptomycin during treatment of tuberculosis can be prevented by combining the antibiotic with PAS, or INH. According to Japanese workers, kanamycin with PAS has a therapeutic effect almost equivalent to that of streptomycin and PAS. Besides, this antibiotic has also been found to be effective in the treatment of patients with *M. tuberculosis* resistant to streptomycin, INH and PAS. Resistance to kanamycin develops more slowly than with streptomycin. Similarly, in the treatment of intestinal diseases tetracyclines or chloramphenicol or any of the newer antibiotics should be combined with such drugs as succinylsulphathiazole to minimise chances of development of resistance.

2. *Untoward gastro-intestinal symptoms*—Fortunately during the initial stages, in the majority of cases withdrawal of the antibiotic relieves the patient. When such symptoms are due to gastric irritation, the drug can be given with milk or other suitable agents like pectin. If it is desirable to avoid high doses, subtherapeutic doses of two synergistic antibiotics may be prescribed. Neomycin is the antibiotic of choice for such combinations, and alternative antibiotics may be combined with some suitable sulpha drug.

With more severe symptoms which might be caused by the suppression of the beneficial effects of the normal intestinal flora, some workers advocate giving the patients live cultures of *E. coli*. This therapy has not been widely tried or accepted. When suppression of the normal intestinal flora upsets the synthesis of some of the essential vitamins, vitamins of the group-B should be concomitantly given to prevent development of avitaminosis and its associated symptoms. If diarrhoea develops, kaolin, pectin, etc., may be administered to control the condition. Pseudo-membranous ileocolitis is a serious complication due to superimposition by pathogenic staphylococci, and measures must be undertaken immediately to control the organism by suitable anti-staphylococcal antibiotics. To avoid proliferation of monilia or

yeasts which might also cause distressing intestinal symptoms, e.g., stomatitis, glossitis, etc., combined therapy or some of the newer antibiotics such as neomycin or kanamycin may be tried.

3. *Blood dyscrasias and neurological and renal damage*—In the majority of cases if the conditions are detected early, mere withdrawal of the antibiotic clears up the condition when the symptoms are in the reversible stage. If however the damage is allowed to progress, recovery or restoration to normal conditions might be difficult. Progressive deterioration has even resulted in the death of the patient. In all cases where massive doses of antibiotics are given or when administration is prolonged, it is always desirable as a matter of routine to check the blood and urine of the patients at regular intervals throughout the period of therapy. Slight neurological symptoms should not be dismissed without serious consideration and where damages are established, the usual specific treatment for such conditions should be resorted to, whenever available.

4. *Allergic manifestations*—Allergic reactions constitute one of the major hazards with antibiotic therapy, almost all the principal antibiotics being sensitising agents. Mild allergic manifestations like itching or wheal formation at the site of injection or even a few rashes and a feeling of nausea may be met with during routine practice among patients receiving the first dose of the antibiotic. These manifestations are usually transient and should not recur during subsequent doses. If the condition persists, worsens, or reappears with subsequent doses, one has to be careful and should try to avoid the antibiotic.

Penicillin and specially preparations of procaine penicillin have been reported to have caused more serious types of allergic reactions, sometimes with disastrous results. In all cases requiring penicillin, it is therefore very important to elicit history of previous injections and reactions. In all cases where the history is suggestive and no alternative method of treatment is available, it is always desirable to do a skin test before the administration of the antibiotic. A positive reaction is always a warning ; a negative reaction although it usually rules out the chances of an immediate severe reaction is nevertheless no guarantee that this should never happen. While doing the skin test arrangement should be kept ready to deal with all exigencies. A cutaneous test should first be performed, followed by an intracutaneous test and this should be done with 'very' dilute concentrations of the antibiotic. A few more tests by increasing the concentration by 10 fold steps are done before performing the intracutaneous test, the dose being 10-10,000 units per ml. It is desirable to carry out the test at such parts of the body as could suitably be controlled by tourniquets above the site of injection—the forearms being ideally suited for the purpose.

In severe allergic reactions associated with dyspnoea, cyanosis, fall in blood pressure, collapse or coma, the serenity of the physician helps a lot for the efficient management of the emergency. A tourniquet immediately placed above the site of injection helps in slowing down the absorption of the drug. In the free arm, 0·3-0·5 ml. of 1 : 1000 aqueous epinephrine solution should be injected intramuscularly and the area massaged to help absorption. A similar injection should also be given around the site of injection of the antibiotic. Benadryl (50-80 mg.) or allied preparations may also be given if need be intravenously, and the injection should be given slowly and should never be given to children. Administration of oxygen, if available, will relieve the respiratory distress. In bronchospasm, aminophylline 0·25 g. in 10 ml. sterile saline, given slowly intravenously, helps to relieve the symptoms. It may be noted that aminophylline should never be given unless symptoms of bronchial spasm exist, as otherwise it would aggravate the symptoms of shock. If the response is not encouraging, administration of epinephrine should be repeated every 15-20 minutes and adrenal corticosteroids (100 mg.) given intravenously to help combat the situation. Penicillinase is indicated only in cases where penicillin can definitely be considered to be the allergen. In such cases, if given without delay, it is an effective means to control the allergic reactions. 1·0 ml. (about 950,000 units) of penicillinase should be injected deep intramuscularly, preferably into the gluteal region.

When the initial symptoms have been controlled, an intravenous drip infusion of 5 per cent dextrose in water should be started and necessary drugs given to maintain the blood pressure at reasonably normal levels.

5. *Other minor reactions*—With some of the antibiotics the site of injection may become painful, and phlebitis may develop after intravenous medication. Phlebitis may be prevented by diluting the antibiotic sufficiently and injecting it slowly. If repetition of injection is necessary the same vein should not be used. Intramuscular injections should be given sufficiently deep, preferably in the deltoid or the gluteal region.

In spite of these difficulties and drawbacks, antibiotics are unquestionably life-saving drugs and the benefit which antibiotic therapy has conferred on the human society far outweighs the hazards associated with it.

JOURNAL OF THE
INDIAN MEDICAL ASSOCIATION

CALCUTTA, DECEMBER 1, 1960

MEDICAL EDUCATION

Elsewhere in this issue are published extracts of the proceedings of the Conference of the Deans and Principals of Medical Colleges in India[1] held at New Delhi on September 12-14, 1960. To focus attention on the salient features of the discussions and recommendations made therein, it is essential to recollect that medical educationists of many countries met at two World Conferences on Medical Education, the first one held in London in August 1953 and the second in Chicago from August 31 to September 4, 1959, under the auspices of the World Medical Association in collaboration with the World Health Organisation, the Council for International Organisation for Medical Sciences and the International Association of Universities. We have also to recall in this connection the proceedings of the Medical Education Conference held at New Delhi on March 15, 1958, under the auspices of the Government of India.

We feel it is our solemn duty to point out that the planning and control of medical education in existing medical colleges and the question of opening further medical colleges must be left to the Medical Council of India. Before finalising their schemes, the Medical Council would naturally have to consult the universities and the Central and State Governments concerned. Shri D. P. Karmarkar, the Union Minister of Health, has very rightly pointed out in the conference of Deans and Principals of medical colleges, that in different countries like the U.S.A., U.K. and U.S.S.R., Governments have come to look upon the health needs of the people as one of their primary concerns. In view of the revolutionary changes that have been witnessed in recent times in the concept of the requirements of medical relief and public health, Shri Karmarkar is to be congratulated for realising that medical relief and public health have come to be looked upon as the fundamental necessities which the people expect from the Government. Shri Karmarkar is also right in indicating that this concept necessarily influences activities in the fields of medical education and medical research. We come to the logical conclusion that the financial burden of medical education should be considered by the Government as an essential and basic foundation over which the superstructure of public health, medical relief and medical research might be built. We regret that an attempt has been made at the Conference to point out that the cost of medical education and the cost of opening new medical colleges were too high. An attempt has also been made to consider how post-graduate training including refresher courses to practitioners could be given without incurring any appreciable extra expenditure on these accounts. Some of the speakers however rightly pointed out that the cost of medical education was not much high as compared with other comparable technical education. While being in full agreement with the view that we cannot afford to be extravagant, we must emphatically declare that the standards of efficiency in matters of health cannot be lowered on any consideration whatsoever.

Regarding refresher courses for all categories of qualified practitioners, we think the universities should be entrusted to arrange for the conduct of refresher courses with the necessary financial assistance from Government. Such courses would naturally be conducted in the cities and towns where the medical colleges are situated. For other district towns, the State Governments have to arrange for such courses, under the guidance of the universities concerned. The universities and the State Governments would be well advised to consult the State or Territorial Branches concerned of the Indian Medical Association and the heads of the medical colleges so that the courses may be conducted in the minimum possible time for the maximum benefit of those for whom these are meant. The I.M.A. has been doing its best in this matter but is not in a position to undertake the full responsibility for financial reasons. All medical men, whether Government employees or private practitioners, should be paid travelling and haltage allowances to encourage a large number of doctors to take advantage of the courses. After all, it is the people who will benefit most if the doctors are assisted to keep up-to-date in their knowledge of medical science.

Regarding selection of the proper type of new entrants to the medical colleges in India, the Conference analysed the figures of admissions on the basis of a competitive entrance examination and those selected on the basis of marks obtained at the university examination for a period of 3 years. It may be noted that the Conference came to the conclusion that with a very few exceptions in the lowest rung, there was no significant difference in the performance of the students selected on either basis. On a rough analysis of these exceptions, the Conference was of opinion that most of these students were not selected on the basis of

[1] *J. Indian M. A.*, **35**: 522, 1960.

marks obtained, but on other considerations such as their caste, regional distribution, etc. The Conference recommended that greater responsibility for admission of students should be vested in the authorities of the medical colleges and they should generally be guided by the results of the university examination, though it did not disapprove of the system of a competitive entrance examination.

We are in general agreement with these recommendations, but it should be pointed out that a portion of the entrants should be higher in age and much better equipped in scientific subjects and the humanities. For this purpose, we may recommend that about 10 to 20 per cent of the seats for admission should be reserved for graduates in science. We are also in agreement with the suggestion of Principal K. N. Bagchi that a few brilliant (first class) M.Sc.s should be selected for admission to every medical college and they should be given stipends to prosecute their studies, so that in due course they might either develop a talent for research or for teaching in non-clinical subjects. It is also felt that a larger number of stipends should be awarded to all categories of students selected on merit, so that the poorer section of the meritorious students would not be deprived of medical education. In future when the shortage of qualified medical men will have been met to a great extent, it should be seriously considered by the authorities concerned whether the minimum qualification for admission should be raised to the standard of graduation in science, so that the entrants are higher in age and are much better equipped in scientific subjects.

While considering the question of the shortage of qualified medical men, the opening of new medical colleges and the number of admission in the old and new medical colleges, we wish to point out that a rational and co-ordinated scheme for utilising the services of the newly qualified doctors as well as those qualified doctors who are either unemployed or under-employed must be worked out and implemented throughout India on a national scale. While new medical colleges are being opened for the production of a larger number of doctors, it would be a paradox if the services of all the available qualified doctors are not fully utilised.

We are well aware of the paucity of funds at the disposal of the Government of India and the Planning Commission as well as of the State Governments for the implementation of a National Health Scheme in India at the present stage. But a modified National Health Scheme on a part-time basis could easily be worked out for absorption of the unemployed and under-employed qualified medical men to cater to the needs of the nation.

As regards the aims and principles of the medical curriculum we are in full agreement with the Conference that a firm grip over the fundamentals of a subject was essential and memorising of details which were forgotten after the examination was over should be eliminated as far as practicable. It is true that more and more subjects have to be added to the medical curriculum with the passage of time and therefore the students are unlikely to be overburdened with only the basic preliminaries of all the subjects that they would have to study in the medical college. The curriculum should be such as to give our medical students a grounding in our social objectives and therefore is in need of revision from time to time.

We are glad to note that the Conference recommended compilation and printing of cheaper medical textbooks in India. If the Government of India and the authorities concerned extended their co-operation and the necessary financial assistance at the initial stage, the Indian Medical Association might undertake this arduous task by opening a Publication Division at the Office of the Journal of the Indian Medical Association.

At present there are 57 medical colleges and 10 to 15 new medical colleges are likely to be started during the Third Five Year Plan. In this connection we also note the data collected by Lt.-Gen. D. N. Chakravarti of Calcutta from 45 medical colleges indicating a total deficiency of 1,271 teachers comprising 770 senior and 501 junior staff. Further statistics collected by Lt.-Gen. Chakravarti showed a deficiency of over 1,260 teachers, 118 in the basic medical sciences and 1,148 in clinical subjects.

The Medical Council of India recommended one teacher for 10 students and we are of considered opinion that this standard should be maintained in the interest of efficiency of teaching. Assuming that the data given above are substantially correct, we fail to understand how new medical colleges could be opened unless and until there was a reasonable chance of meeting the gross deficit in the number of teachers. It is obvious that medical teachers could not be produced overnight and a teacher could not be designated as a Professor unless he attained the necessary teaching experience and served as a Lecturer or Asst. Professor for at least 5 years, as pointed out at the Conference by Dr. Baxi of Jamnagar. The suggestion of Dr. Krishnaswamy of Madras that the cost of new medical colleges would definitely be higher than

the cost of expansion of existing colleges should be seriously considered, as it was much more economical to expand the existing colleges. We feel that the existing medical colleges should be expanded wherever practicable and the number of students for admission to such expanded colleges be increased, provided this did not entail an unusual heavy expenditure for building construction.

Regarding scales of pay of medical teachers, we are in general agreement with Dr. Mehta of Bikaner that the pay scales for pre-clinical teachers and full-time clinical teachers without the right of private practice should be at least the same as those allowed to I.A.S. officers. But considering the nature of training of a competent medical teacher and his duties, we are of opinion that the salary scales of whole-time Professors in medical colleges should be much higher than those of I.A.S. officers and other comparable services. It must be borne in mind that even a junior medical teacher starts his career as a teacher quite late in life after undertaking an intensive course of study and training for at least 12 years after passing the School Final Examination. It is, therefore, obvious that the starting salary of the full-time medical teacher must be much higher than the starting salary for I.A.S. and other comparable services. In view of the essential and technical nature of the work as well as of his potential regarding maximum earning if he did not accept a full-time job, the pay scales should be properly increased. At the conference Dr. C. B. Singh of Kanpur rightly pointed out that first class students were not now so keen for admission into medical colleges and were trying to take up other professions like engineering because of more attractive prospects. Unless the salary scales of qualified doctors were adequately increased, we might have to face a situation when first class meritorious candidates would not be forthcoming for the various health services and also for medical education and medical research.

We are in general agreement with the views expressed at the Conference that a few full-time teaching teams were required in each medical college so that these non-practising medical teachers could devote all their energies and time to teaching as well as to research. It has already been mentioned that members of such full-time non-practising teams must be paid high salaries to attract the right type of persons. In this connection we wish to point out that the salary scales[2] suggested by the Indian Conference on Medical Education held in 1958 and endorsed generally by the Health Ministers of India at their Conference were far below the salary scales which would attract the right type of qualified, trained and experienced teachers. As India cannot afford adequate salaries if all the medical teachers in all the medical colleges were made whole-time and non-practising, under the circumstances, it is our considered opinion that the Government of India, the State Governments and other authorities concerned should proceed slowly in the matter of appointment of full-time teaching staff in the medical colleges. Moreover there is an actual dearth of qualified and experienced teachers in India. It is, therefore, obvious that the Government and the authorities concerned should utilise all available qualified and trained teachers for teaching purposes at least up to the age of 60 years. While utilising the services of the part-time medical teachers, it is essential that such part-time (or honorary) personnel be given academic ranks of Director, Director-Professor, Professor, etc., commensurate with their experience and ability. Facilities and privileges regarding leave, overseas study, security of service, study tours in India and abroad, etc., allowed to full-time teachers should also be extended to part-time and honorary personnel.

As regards post-graduate teaching institutes, we note with appreciation the views expressed by Shri D. P. Karmarkar, Union Minister of Health. It is really not so much necessary for India to multiply institutes for post-graduate medical studies. In this connection we wish to draw the attention of the Government to the suggestion of Dr. P. N. Wahi of Agra that the decision regarding upgrading of certain departments of medical colleges should rest with the Medical Council of India and the University concerned and not with the Government of India or the State Government. By upgrading suitable departments of the medical colleges and converting these into post-graduate institutions for the subject concerned, a lot of unnecessary expenditure in building additional post-graduate teaching institutions could be avoided. This, along with a system of regular training programme of post-graduate fellowships for a larger number of personnel, would be beneficial in increasing the number of medical teachers within a comparatively short period. We are in accord with the recommendation of the Conference that there must be some kind of co-ordination between the colleges and post-graduate institutions. Frequent exchanges of visits between such centres would also help in the standardisation of teaching and development of specialities in the various parts of India. We hope the necessary finance for such visits will be forthcoming from the authorities concerned.

[2] *J. Indian M. A.*, **35**: 530, 1960.

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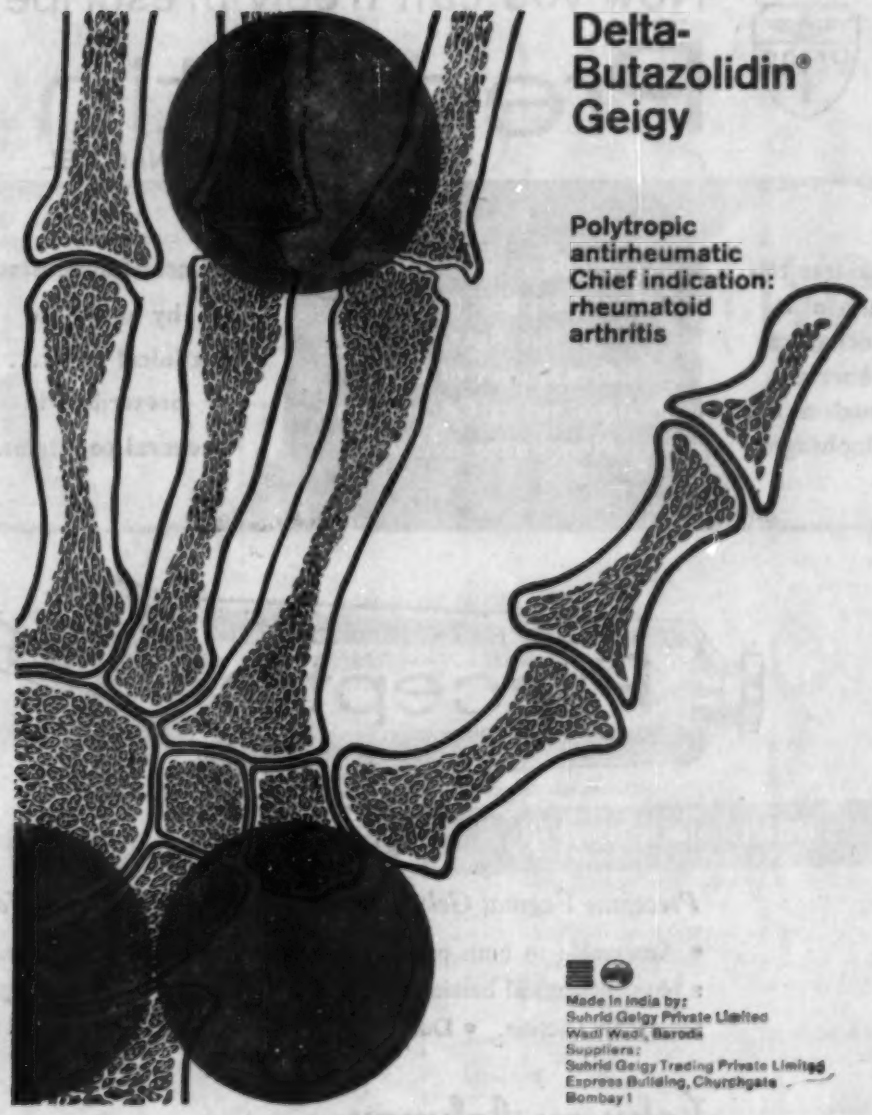

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GENERAL PRACTICE DIGEST

THE MANAGEMENT OF SEVERE VIRAL HEPATITIS

As antiviral drugs effective against the causative agents of acute viral hepatitis are not yet available, the treatment of the disease is non-specific, symptomatic and supportive. The treatment is directed towards reducing the duration of the disease, alleviating some of the subjective discomforts experienced by patients and in reducing the mortality rate.

Severe hepatitis includes all cases in which the viral insult to the liver is of sufficient proportions to result in clinical illness with jaundice.

Rest—Strict rest is recommended in the early weeks of severe attacks. But in most cases bathroom privileges and other mild activity about the ward may be permitted when the patient feels well enough to engage in it. Patients permitted *ad lib* activity of a mild nature experience less of the profound asthenia that may follow long periods of inactivation in bed.

Diet—A nutritious diet is very important for these patients. A high protein and high carbohydrate diet with high caloric intake provides clinical improvement in these patients. The dietary fat level is relatively unimportant.

Lipotropic agents—There is lack of evidence that lipotropic agents are of value in the management of acute hepatitis. Methionine may be dangerous in acute hepatitis and its use may be followed by the appearance of coma.

ACTH and adrenal cortical steroids—The mechanisms of action of these agents in hepatitis are not clear. But hormonal treatment of the disease, especially with cortisone or prednisone, is becoming widespread. ACTH and adrenal cortical steroids should be used only in fulminant and very severe cases of acute hepatitis. Those who fail to respond to these drugs should be treated with more standard treatment measures.

The use of ACTH or adrenal cortical hormones in acute viral hepatitis is followed by increase in appetite and sense of well-being, sharp drop in serum bilirubin concentration, improvement in cholesterol esterification and probably shortening of the course of the disease. Healing of the lesions in the liver may also be accelerated.

It would seem advisable to avoid the use of intramuscular ACTH, and to use either intravenous ACTH, 25-40 units daily in 1,000 c.c. of glucose in water over an 8-hour period as an initial dose, or preferably, cortisone or some other adrenal cortical steroids given orally in initial doses of, or equivalent to, about 400 to 500 mg. daily of cortisone. In the case of prednisone a daily dose equivalent to the above would be about 100 mg. The dosage should be decreased very slowly, e.g., in decrements of 50 mg. cortisone or 10 mg. prednisone, and therapy should be continued until liver function tests are normal. The dosage should be decreased only when liver tests, particularly the serum bilirubin concentration and serum transaminase activity, are found to be improving. At the end of treatment with one of the adrenal steroids, patients should receive single daily intramuscular injections of ACTH gel, 40 units, for 3 days, in order to restore cortical activity to a normal level.

Selection of patients for ACTH or adrenal cortical hormone therapy—These drugs should be tried on acute cases and those cases which are progressing to coma. They are particularly indicated when signs of central nervous system dysfunction appear, e.g., lethargy, drowsiness, disorientation, euphoria and extensor-plantar responses. Additional ominous signs are the appearance of the peculiar flapping tremor often seen in hepatic insufficiency, the paroxysmal high-voltage slow waves that often appear in the electrocardiogram in impending hepatic coma, the appearance of ascites or rapid shrinkage in the size of the liver, and marked prolongation of prothrombin time (e.g. to 35 to 40 seconds or more). These drugs should also be given to patients who fail to do well on other, more standard measures.

The use of these drugs in viral hepatitis in general, however, is not advocated.

Hepatic Coma

The appearance of hepatic coma during the course of acute viral hepatitis is a most ominous prognostic sign and is usually followed by death. Its management is basically the same when it appears in the course of any liver disease. This includes good nursing, and maintenance of careful fluid and electrolyte balance and caloric intake. Protein and other nitrogenous substances should be omitted from the tube feeding formula or intravenous fluids. Daily tap water enemas and oral administration of neomycin, 8-12 g. daily, will reduce the portal blood ammonia levels (due to action of intestinal bacteria).

ACTH and corticosteroids—Patients with acute viral hepatitis who go into hepatic coma are desperately ill and are in considerable danger of dying. The use of ACTH or adrenal steroid therapy in such cases, in the form of cortisone, prednisone or prednisolone, is therefore fully justified. Massive doses (1000-1500 mg. daily) are recommended. Not infrequently, return of consciousness is seen in 24-48 hours after the beginning of cortisone, 1000 mg. or intramuscular prednisolone, 200-250 mg. daily. Dosage may then be dropped by 200-mg. of cortisone daily to a level of 400 mg. a day, after which the gradual dose tapering mentioned above may be undertaken. This therapy should be continued until liver function test results are normal.

OTHER MEASURES:

Other measures recommended are administration of vitamin K, antibiotics and sedation.

Vitamin K—This drug is indicated in acute viral hepatitis when hypoprothrombinaemia appears. Vitamin K, may be given orally in doses of 5-20 mg. daily, or intravenously in doses of 5-50 mg. daily. Treatment should be continued until the prothrombin time is normal.

Antibiotics—Chlortetracycline is given in acute viral hepatitis, with or without coma.

Sedation—Sedatives should be used with great caution, if at all, in even mild viral hepatitis—because these

drugs are very poorly tolerated in those patients and may even help development of hepatic coma. When necessary, pethidine or one of the barbiturates excreted largely by the kidney (e.g. phenobarbital), may be given for short periods only.

Isolation—The blood and stool of patients with infectious hepatitis are infectious—it is not known when the virus disappears from them. Intestinal and syringe and needle precautions are necessary. As it is difficult to differentiate infectious hepatitis from serum hepatitis on clinical grounds, isolation procedures appropriate for infectious hepatitis should be instituted.

From an article by J. A. Barondess—*Med. Clin. N. Amer.*, **44** : 743, 1960.

CURRENT MEDICAL LITERATURE

Hyperbilirubinaemia in Premature Infants and the Effect of Synthetic Vitamin K

CORNER, B., BERRY, E. AND NEALE, A. V. (*Lancet*, **1** : 713, 1960) from the Department of Paediatrics of the University of Bristol give in the following lines the summary of their observations :

Serial serum-bilirubin levels have been studied in 436 newborn premature infants to determine the maximum level of bilirubin.

The maximum and fourth-day serum-bilirubin levels of premature infants given a synthetic vitamin-K preparation—menaphthone dipotassium bisulphate ('Vikastab') —in various dosages intramuscularly during the first two days of life have been compared with the serum-bilirubin levels of an unselected group of premature infants who had no vitamin-K analogue.

The development of hyperbilirubinaemia was related to immaturity, and was unaffected by this vitamin-K analogue even in relatively high doses.

Hyperbilirubinaemia in premature babies is primarily related to immaturity.

The synthetic vitamin-K preparation, menaphthone dipotassium bisulphate ('Vikastab') did not seem to influence the development of hyperbilirubinaemia in immature babies when given intramuscularly in divided doses up to a maximum total dose of 60 mg. during the first two days of life, nor was the risk of kernicterus increased.

If a vitamin-K water-soluble analogue is considered necessary for a newborn infant, it is desirable that the preparation chosen should not interfere with the normal processes of bilirubin excretion. Vikastab seems to be safe and it can if necessary be given in considerably higher dosage than synkavit.

Electroencephalogram and Myopathy

PERLSTEIN, M. A., GIBBS, F. A., GIBBS, E. L. AND STEIN, M. D. (*J.A.M.A.*, **173** : 1239, 1960) from the Children's Neurology Service, Cook County Hospital; the Department of Paediatrics, Northwestern University Medical School; and the Department of Neuropsychiatry, University of Illinois, is reporting on the Electroencephalographic findings in 101 patients with muscular dystrophy and related myopathies observe : Abnormal electroencephalograms were found in a total of 39 patients; 45 per cent of 62 patients with pseudohypertrophic muscular dystrophy, 18 per cent of 22 with amyotonia congenita, 37 per cent of 8 with facioscapulohumeral dystrophy, and 45 per cent of 9 with other myopathies and related syndromes. The most common abnormalities in the electroencephalogram were 14-and-6-per second positive spikes, seen especially in patients with pseudohypertrophic muscular dystrophy. Other abnormalities were spike seizure discharges, fast or slow frequency, asynchronous sleep patterns, and amplitude asymmetries. The electroencephalographic abnormalities increased with advancing age but were not related to severity of the seizures. It is suggested that the high incidence of abnormal electroencephalograms in patients with muscular dystrophy may be due to basic maturational neurophysiological involvement, an integral part of muscular dystrophy.

Nephrotic Syndrome Treated with Cortisone in Intermittent High Dosage

MITCHELL, R. G. (*Lancet*, **1** : 843, 1960) from the Institute of Child Health, University of St. Andrews, writes :

Five children with the nephrotic syndrome who had not responded satisfactorily to one or more courses of hormone therapy were treated with large doses of cortisone given intermittently for long periods as advocated by Lange *et al* (1953).

This treatment enabled all the children to resume their normal lives, and kept them well, without causing serious side-effects. Three have been in complete remission for 12-30 months since treatment with cortisone was stopped, but two relapsed after maintenance treatment was withdrawn.

The Lange regimen, preferably substituting prednisolone for cortisone, is recommended for all cases of nephrosis which have not responded to other schemes of treatment, and this may be the treatment of choice for every case of nephrosis in children.

Inapparent Measles After Gamma Globulin Administration

BLACK, F. L. AND YANNET, H. (*J.A.M.A.*, **173** : 1183, 1960) from the Section of Epidemiology and Preventive Medicine, Yale University School of Medicine, and the Southbury Training School, Southbury, Conn, write :

The appearance of antibodies and development of immunity to measles was observed in 19 children in whom signs of measles had been prevented, during the course of epidemics, by the administration of gamma globulin. The epidemics occurred in two cottages of an institution for mentally retarded children. Both virus-neutralising and complement-fixing techniques were used for the serologic tests, and human infant kidney tissue cultures were used for virus isolation. Of 38 susceptible children exposed to measles under these conditions and given gamma globulin, 19 developed measles antibodies without overt signs of the disease. Five of these 19 children failed to contract measles when exposed again seven months later.

High Blood-Pressure and Stroke

DICKINSON, C. J. AND THOMSON, A. D. (*Lancet*, **2**: 342, 1960) from Institute of Clinical Research and Middlesex Hospital Medical School, London, from an analysis of necropsy study of heart-weight and left ventricular hypertrophy in 340 cases who died in Middlesex Hospital of cerebrovascular accidents write:

340 patients died in the Middlesex Hospital with spontaneous cerebrovascular accidents between 1931 and 1959 inclusive. Their records have been inspected; and it has been found that on average those with hindbrain strokes had greater heart-weights than those with forebrain strokes. There was a slightly higher prevalence of left ventricular hypertrophy in the cases of hindbrain stroke, but this was not significant. No significant difference was found in the heart-weight or in the prevalence of left ventricular hypertrophy as between cerebral haemorrhage and cerebral infarction.

These results, together with other evidence, support our previous work, which suggested that narrowing of the main cerebral arteries (particularly the vertebral arteries in their cervical course) had a primary causal role in benign "essential" hypertension. These results also support the conception that cerebral haemorrhage and cerebral infarction both have the same cause.

Syndrome of Magnesium Deficiency in Man

HANNA, S., HARRISON M., MACINTYRE, I. AND FRASER, R. (*Lancet*, **2**: 172, 1960) from the Department of Medicine and Chemical Pathology, Postgraduate Medical School of London, write:

Clinical and metabolic observations are recorded in three cases which showed hypomagnesaemia without other electrolyte deficiencies.

The clinical picture was very different from that usually ascribed to hypomagnesaemia. Tetany in the sense of spontaneous muscle-cramps was completely absent. The syndrome comprised: (1) a positive Chvostek's sign, with a negative Trousseau's sign; (2) a low-voltage electrocardiogram; (3) liability to epileptiform convulsions; and (4) depression, vertigo, ataxia, and muscular weakness.

All these signs and symptoms remitted rapidly when the serum-magnesium levels were restored to normal.

Forced Diuresis and Alkalinisation of the Urine in Acute Barbiturate Poisoning

LASSEN, N. A. (*Lancet*, **2**: 338, 1960) from the Departments of Psychiatry and Clinical Biochemistry, Bispebjerg Hospital, Copenhagen, Denmark writes that forced diuresis and alkalinisation of the urine were used to treat fourteen cases of very severe barbiturate intoxication (the maximal serum barbiturate concentration averaged 19 mg. per 100 ml.). Urea was used as the diuretic agent, and sodium lactate as the alkalising agent. About 11 litres of alkaline urine per 24 hours was produced during therapy, which lasted 42 hours on average.

The overall elimination-rate of barbiturate from the body was increased in all fourteen cases over that of comparable control cases. The most pronounced effect was in patients with diethyl, diethyl+allylisopropyl, and ethylallyl barbiturate intoxications; in these patients the period of unconsciousness was reduced to about a third. For allylisopropyl and phenylethyl barbiturate the reduction was about half. The least effect was seen in a case of diallyl intoxication, where the duration of unconsciousness was reduced by only 1·4.

Use of Vasopressin in the Control of Bleeding from Oesophageal Varices

SHALDON, S. AND SHERLOCK, S. (*Lancet*, **2**: 222, 1960) from the Department of Medicine, Royal Free Hospital, London, write:

20 units of vasopressin given intravenously in ten minutes controlled haemorrhage from oesophageal varices in 8 patients with hepatic cirrhosis. Estimated portal pressures fell. In 3 patients bleeding did not recur, and in 2 of these portacaval anastomosis was later performed. Haemorrhage recurred in 5 patients and a diminished response to vasopressin was observed. 4 patients died with a terminal massive bleeding. The high mortality reflected the degree of liver failure rather than the method of treatment. No adverse side-effects were observed with vasopressin and its use as an alternative to the Sengstaken oesophageal compression tube is suggested.

Postoperative Prophylactic Anticoagulants

CHALMERS, D. G., MARKS, J., BOTTOMLEY, J. R. AND LLOYD, O. (*Lancet*, **2**: 220, 1960) from the United Cambridge Hospitals reported on five years experience of the use of prophylactic anticoagulants in 1877 gynaecological and obstetric postoperative patients.

The patients received phenindione from the third to the tenth postoperative day in doses to maintain the prothrombin levels at between 15 and 30 per cent.

The incidence of thrombotic disease was reduced by a factor of five. It is concluded that anticoagulants should be administered routinely after gynaecological operations and in selected general surgical cases.

On the basis of experience in over 1800 patients over the past five years the following conclusions may be drawn:

(1) For adequate prophylaxis the blood prothrombin content must be kept below 30 per cent, while to avoid haemorrhage it should not fall below 15 per cent.

(2) Control of the blood prothrombin level necessitates frequent estimations.

(3) The time and cost involved, coupled with the risk of haemorrhage, makes it unjustifiable to use this method routinely in general surgery.

(4) The results suggest that prophylactic anticoagulants have a limited place in certain patients who have undergone operation; particularly those who have had abdominal operations and who have cardiac insufficiency, a previous history of thrombophlebitis, or bad varicose veins.

(5) In gynaecology the results justify adoption of the method as a routine postoperative procedure in view of the known high incidence of thromboembolism.

CURRENT TOPICS

CONFERENCE OF DEANS AND PRINCIPALS OF MEDICAL COLLEGES, 1960

The Conference of Deans and Principals of Medical Colleges was held at New Delhi on September 12-14, 1960. The Conference was inaugurated by the Union Health Minister followed by addresses of Shri C. D. Deshmukh, Chairman of University Grants Commission, and representatives of the Rockefeller Foundation, World Health Organisation and Technical Cooperation Mission. Lt. Col. V. Srinivasan, Director General of Health Services, took the chair.

Inaugural Address

The following is from the text of the inaugural address by Shri D. P. Karmarkar, Union Minister of Health :

The questions that have been repeatedly discussed at such conferences are those that are vitally connected with Medical Education examined in the background of our present requiremets. Improvement in the curriculum with a view to evolving not merely a medical expert but an efficient member of the social fabric devoted to the mission of advancement of national health as a whole, efforts to eliminate avoidable wastage by an examination of the reasons and devising methods to minimise such failures, better correlation between medical relief and preventive care, creating of improved facilities for researches in the field of medicine in relation to national health problems—these and allied problems crop up whenever we come to consider how we could effect improvement in our present system of Medical Education.

We are all aware of the revolutionary change that has been witnessed in recent times in our concept of the requirements of medical relief for the people. More and more medical relief has come to be looked upon as one of the fundamental necessities which the people do expect from the Government. In different countries like the U.S.A., U.K. and U.S.S.R. Governments have come to look upon the health needs of the people as one of the primary concerns. This concept which has now become almost universal in character necessarily influences our activities in the field of medical education. In another context Mark Twain once observed "If your doctor knows only medicine you may be sure that he does not know even medicine." It is obvious that our doctors have to be trained to appreciate fully social and national objectives which they are expected to promote with other fellow citizens.

One of the subjects that we propose to discuss in this Conference is as mentioned above the rather substantial wastage that occurs during the course of medical studies. We have no definite data to apprise us of the exact magnitude of the problem. As has been mentioned in one of the notes, an analysis of such failures in two colleges has shown that the ultimate wastage is not substantial. As students who fail in the first chance take further chances and a large majority of them pass out successfully in the end. But the subject requires careful study and some of the suggestions made in this regard especially those relating to the method of assessment of the student's competence not on the basis only of the yearly examinations but also of periodical check up, the greater emphasis on practical work along with an elimination of too much attention on details relating to a subject, especially like Anatomy and Physiology do deserve your consideration.

It is now a commonly accepted principle that whereas students of any faculty should have a firm grip over the fundamentals of a subject, memorising of details which are forgotten after the examination is over should be eliminated as far as possible. In this connection the suggestion that standardised textbooks may be compiled from which questions should be expected and that the teacher may give such supplementary instructions in his lectures as he deems advisable may be considered useful.

Another subject of importance that you will be discussing is the evaluation of the existing curriculum in medical studies with a view to planning a coordinated programme of research for evolving a suitable curriculum. It was inevitable that more and more subjects came to be added to the curriculum as time passed on : Complaints have been made in some quarters that the student is at the present moment over-burdened with the subjects that he has to study in a Medical College.

I must confess that it is easy to advise the authorities concerned to evolve a curriculum which will make the medical student not only competent in his technical field but also to train him in our social objectives. Dr. Melvin Casberg's paper on the subject which has been circulated to you makes very interesting observations in this regard. I am quite sure that this subject will evoke very stimulating discussion though I am not quite sure whether at the end of the discussion we shall be nearer to the solution of the problem, obviously for the reason that in today's world we are expecting so much from the medical student in relatively so short a time. This is indeed a very fruitful subject for consideration of medical experts.

As you all know the phenomenal increase in the number of medical colleges in the country has given rise to the problem of finding an adequate number of competent teachers to man them. On a rough assessment Lt. Gen. Chakravarti tells us that in today's context there is a deficiency of 1260 teachers, 118 in basic medical sciences and 1148 in clinical subjects.

I should like respectfully to say that perfection is only built on the basis of imperfection and I for one do not at all feel sorry that new institutions, perhaps inadequately manned and illequipped, have come into existence because I have a definite feeling that there is need of both speed and improvement in creating facilities for training of the large number of medical personnel necessary for the advancement in our country. Now I look forward in addition to the present 57 medical colleges another 10 to 15 medical colleges during the Third Five Year Plan. Difficulties are there not to deter us but to goad us to find a solution.

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In my opinion it is not necessary for us to multiply institutions for post-graduate studies. Every competent physician and surgeon in a hospital should be deemed to be a capable teacher for post-graduate education. We have almost forgotten that an artist in ancient days was in himself an institution for imparting expert training in that particular art; that a competent artist's son found his graduation at the feet of his father and that an expert musician did not ask for Governmental aid to give training to the few devoted students.

The recent experiment in Delhi to train 75 additional post-graduate students on the strength of four well organised hospitals in the city without any additional expense except the stipends paid to the students may perhaps deserve your consideration in this matter. We have in the country some very fine hospitals and a number of distinguished physicians and surgeons and specialists in other fields of medicine, who can be entrusted with additional responsibilities of training post-graduate students.

Two years ago I happened to mention at an annual meeting of the Indian Medical Association the need to intensify our efforts to undertake refresher courses for private practitioners. There is nothing essentially new in this idea and some good attempts have been made in some of our centres by making such refresher courses available to the general practitioners. I am happy to see that more organised efforts have recently been undertaken in Delhi and Hyderabad. I am quite sure that such efforts will be undertaken in other suitable centres also. It is not only the general practitioner but also the junior medical officer in the employ of Government that requires such refresher courses for keeping him informed about the progress of medical theory and practice.

I should like to refer to one more subject which we are to discuss, namely medical research *vis-a-vis* our colleges. A note prepared by Dr. C. G. Pandit, Director, Indian Council of Medical Research, that has been circulated to you shows the progress that has been made in this field. One feels happy to note the keen interest teachers have been taking in medical research. It is as it should be. Medical Education and Research go hand in hand together one stimulating and strengthening the other. I see a number of useful suggestions made regarding the methods of encouraging research in medical colleges.

I need hardly emphasise the need of concentrating greater attention that has been the case in the past on our national health problems. As the late Dr. Allen Gregg rightly observed that researches of diseases of India should be done by Indians.

Summary of General Discussions

The high cost of medical education, possible methods of economy and financing medical colleges:

While there was need for more doctors and hence more medical colleges, the cost of setting up new colleges was very high. The Parliament had also commented that the cost of buildings, equipment, etc., of medical colleges were very high, and that economy be effected by cheaper buildings, giving up all luxuries and ordering only essential equipment. If the standards recommended by the Indian Medical Council were high then they must be brought down. He also referred to the need for bringing down cost of medical education from the student's point of view.

Col. B. L. Taneja said that the estimates prepared by the Patel Committee, far from being high, were rather on the low side.

General Chakravarti and Dr. Vengsarkar pointed out that recurring expenditure was mostly on the emoluments of teaching staff and most of them worked for about 50 per cent of their time in the hospital side, so that on *pro-rata* basis 50 per cent of expenditure on their emoluments should be debited to the hospital side.

Dr. P. N. Wahi said that the cost of the medical student himself was not high as compared with other technical colleges. From the Government point of view he suggested that the cost could be reduced by (i) increasing the number of admissions (ii) reducing the teaching equipment, by having one common laboratory instead of two or three separately where possible; and (iii) employing non-medical persons, where they could be usefully employed, such as in Anatomy, Physiology, Biochemistry, etc.

Dr. Krishnaswami (Madras) said that the cost of new medical colleges would definitely be higher than the cost of expanding of existing colleges. It was therefore more economical to expand old colleges. He suggested that the failure rates be improved and that this would diminish cost of medical education to the student. Other suggestions made were that in addition to increase in number of admissions, the period of internship be reduced from one year to six months and that essential equipment should be produced in the country.

Dr. R. P. Koppikar of Manipal suggested that teaching of subjects such as Anatomy and Physiology could be pooled for 2 or more medical colleges in a single place. The Chairman thought that this could be feasible only if two colleges happened to be in the same town.

Dr. P. M. Bhandarkar (Aurangabad) said that no comparison could be made between a medical college and an engineering college, as the former dealt with human life and the latter with machines.

Dr. B. N. Lingaraju (Mysore) suggested that lesser number of Departments be established, so that there could be saving in the appointment of supervisory staff. Dr. G. V. Barve stated that if cheaper medical books could be printed and hospital accommodation provided to all students, medical education would perhaps be cheaper to the student. Dr. R. N. Misra was of the opinion that there was no scope for reduction in cost and that raising the number of admissions would certainly give rise to additional expenditure in the construction of bigger lecture halls and laboratories. He also considered that the cost was not so high as it appeared to be and that the minimum needs of education should not be sacrificed. Cheaper equipment would probably be an answer to the problem.

Dr. B. Narayana suggested that in addition to whole-time teachers, part-time teachers could also be employed

as was done in other countries. Dr. Narasimha Rao from Vishakhapatnam suggested that the cost of construction could be reduced by locating medical colleges in rural areas.

The Chairman answered the various points and summed up that in the Third Five Year Plan, out of 11,000 crores only 300 crores had been allotted to Health. If the cost of medical colleges was not reduced, it might not be possible to start any more. He wanted the Sub-Committee to explore the possible ways of bringing down the cost to the minimum. He cited as an example, Auditoriums whether it was really necessary for a medical college to have one. He also suggested the combination of pharmacology and physiology laboratories, a single laboratory for Histology, Histopathology, etc. He also explained the steps being taken to bring out cheaper editions of standard text books as also the measures. Government were considering to encourage authors to write books suitable to Indian conditions.

Finally he suggested that minimum requirements be worked out on the basis of 100 admissions in a medical college.

MEASURES FOR OBTAINING AN INCREASING NUMBER OF TEACHERS FOR THE EXISTING AND FUTURE MEDICAL COLLEGES NOW PLANNED AND MAXIMUM UTILISATION OF EXISTING FACILITIES FOR INCREASING POST-GRADUATE TRAINING AND FINANCIAL ASSISTANCE REQUIRED FOR THIS PURPOSE :

General D. N. Chakravarti suggested that the Sub-committee might go into the question as to what would be the minimum number of teachers when 100 admissions were made. The Government of West Bengal had worked on a principle which took into consideration the load factor. He had prepared a note to that effect which he circulated to the Delegates. The data collected from 43 colleges indicated a total deficiency of 1271 teachers, comprising 770 senior and 501 junior staff. He suggested two methods to overcome this deficiency. One was to accept the principle of the minimum staff (teachers) required. The Indian Medical Council had recommended one teacher for 10 students. This standard was hard to attain. The average of 79 teachers for an intake of 100 students a year appeared reasonable. If that principle was accepted, then the matter could be processed further.

Dr. Casberg (Ludhiana) thought one real high potential had not been tapped and that was the appointment of non-medical men to teach basic science subjects. This type of individual, he said, had demonstrated his utility and abilities in the West. Drs. Lingaraju and Krishnaswami agreed with Dr. Casberg.

Dr. Wahi, referring to the decision of the Government of India in upgrading certain Departments of certain colleges felt it was the Medical Council of India or the University and not the Government of India who should decide as to which Department should or should not be upgraded.

Dr. Baxi of Jamnagar suggested that a graduate showing an aptitude for teaching should be given a training programme of two to three years, the first year being a common training in the basic disciplines like statistics, methodology, research, instruments, etc., and the second year for intensive training in the speciality with the writing of thesis. He wanted an assured appointment as lecturer in the speciality to each candidate after passing the post-graduate course. He further thought that a candidate could become a Professor only if he had served as a lecturer in that speciality for at least five years.

Dr. Pisharody of Calicut explained the difficulties experienced by him. He said that though there were many doctors with postgraduate qualifications, they did not come forward because of poor encouragement and rigid insistence on the prescribed teaching experience. He wanted relaxation and discretion in regard to the latter.

Dr. S. S. Anand (Amritsar) made three suggestions :—(i) that 3-5 fellowships of Rs. 300/- p.m. for each subject should be made available; (ii) that as described in the note by Dr. C. G. Pandit, the research workers under the auspices of the I.C.M.R. or any other fellowship should be employed as part-time teachers, so that the undergraduates could gain by his experience and the worker also could gain teaching experience and so fulfil the requirements of the Medical Council of India; (iii) that the superannuation age of teachers be raised from 55 to 60 years, and after the age of 60 years he should be utilised as a consultant in an honorary capacity by any college.

Dr. C. B. Singh suggested that brilliant students passing M.B.B.S. with high marks should be selected for the posts of research workers/teachers and they should be given the necessary training for this purpose.

Dr. Subbaraman thought that the existing facilities for postgraduate training were not being used to the full. He wanted a regular training programme of post-graduate Fellowships which should be partly financed by the Central Government. He also wanted the upgraded Departments in various medical colleges to be assisted financially by the Central Government.

General Chakravarti suggested that the Sub-committee should consider whether by encouraging under-graduate students to take up elective subjects, it would improve the chances of assessing the ability of a student, firstly for post-graduate education and secondly to become a teacher.

Dr. Kasliwal emphasised the fact that the recommendations of the March, 1958 Conference were not implemented though it was held primarily to discuss ways and means to increase the number of teachers. He hoped that the recommendations made at this conference would be implemented to some extent. He also agreed that non-medical men should be appointed as teachers in those branches most suitable to their training and attainments.

Dr. Bhandarkar thought non-medical teachers were not successful in India at present, in the field of biochemistry and embryology.

Dr. Vengsarkar replied that such teachers had been employed with success in U.K. & U.S.A.

Dr. Mehta of Bikaner suggested that the pay scales for pre-clinical teachers with non-practising allowance should be at least those allowed to I.A.S. Officers.

Dr. Jagannadha Reddy proposed that the Harvard experiment could be tried out as regards appointment of non-medical teachers for non-clinical subjects.

Other recommendations were (1) attractive emoluments to teachers, (2) whole-time teaching units, (3) a separate cadre of teachers under a separate Directorate of Medical Education, (4) increase in the retiring age of teachers from 55 to 60 and in certain cases to 65, (5) adequate facilities for research in the matter of finances, equipment, etc., (6) recognition of research for promotion to higher posts, (7) provision of fellowships to brilliant students, (8) establishment of a regional training centre to impart knowledge of methods of teaching with special reference to medicine.

The Chairman requested Dr. Kasliwal to take note of this for the sub-committee's consideration.

Dr. Dikshit said there were two aspects of post-graduate teaching: (1) giving post-graduate training to personnel for giving medical relief to people and (2) post-graduate teaching with a view to become a teacher. He said that certain ways would have to be found to fulfil either by shorter periods of training or bringing in the diploma which must be taken earlier. The committee would have to bear this in view when considering the subject.

AN EVALUATION OF THE EXISTING CURRICULUM IN MEDICAL STUDIES WITH A VIEW TO PLANNING A CO-ORDINATED PROGRAMME OF RESEARCH FOR EVOLVING SUITABLE CURRICULUM :

INTEGRATION OF PRE-MEDICAL COURSES IN THE MEDICAL COLLEGES :

Dr. Casberg stated that the under-graduate should be made to feel the stimulus of the faculty, research and teaching during the formative years of his study, as otherwise, he would miss a real opportunity.

Dr. Madan Parshad of Darbhanga pointed out that the number of hours could be reduced and duplication avoided in the departments of bacteriology, entomology and helminthology by teaching these subjects in one department. Dr. Gujral of Lucknow stated that a student after the higher secondary course would have a pre-medical year, which could be utilised for teaching biochemistry, physical chemistry, biostatistics, English and a foreign language, in the medical college itself. Short intensive courses in anatomy, physiology and pharmacology could be arranged with periodic examinations. Dr. Chandy suggested that as the universities were responsible for the curriculum and the integration of pre-medical and pre-clinical subjects, the Conference could recommend that Universities grant a certain amount of freedom to medical colleges to modify curriculums within certain limits. Such freedom for experimentation is desirable under the recent circumstances.

Dr. Kasliwal agreed with Dr. Chandy and desired that more emphasis should be laid on elective subjects. He felt that the pre-medical year should be done in a university and not in a Medical College. This would help to bring mature students with broad outlook in life to the medical colleges. Dr. G. Prasad of Patna emphasised the fact that the medium of instruction in school period was the regional language and when students were faced suddenly with English at pre-medical and medical courses, a crisis was created and resulted in high rate of failures.

Dr. Baxi of Jamnagar wanted the number of holidays to be curtailed and not the curriculum.

Dr. Anand was against the idea that pre-medical course should be done in the medical colleges, as that would lead to duplication in staff, equipment and construction with the less added disadvantage of time in university, so important in the building up of student life. The Vice-Chancellor of Punjab had suggested that 4-5 colleges in that State should be entrusted to take up pre-medical education as that would save money in providing hostels, equipment, etc. Dr. Bose of Indore pointed out that Mathematics was given up in most cases after the 8th standard, which deprived the science students of a sound background. Besides he thought that the Medical Colleges and Higher Secondary Schools were short of staff, laboratories and equipment, etc. The integration of pre-medical course in medical colleges, he said, would add to already existing difficulties.

Dr. Indra was against the integration of pre-medical course in the medical colleges. Col. Taneja advocated the decreasing or omiting of one year internship. General Chakravarti gave details of a proposal for an integrated course of 5 years plus one year internship. As Pondicherry Medical College and the Topiwala National Medical College, Bombay had started the integrated course, General Chakravarty suggested that they give their views on the subject to the delegates present. Dr. Vengasarkar then explained the position at Pondicherry. He told that the subject of Physics was integrated with Physiology. Thus integration was effected, without the need of students trying to score marks to be considered eligible for the medical course. Here there was an intelligent co-ordination of subjects and a better understanding of them.

Dr. Pathak wanted that if need arose, science teachers might be appointed to teach the subjects to pre-medicals.

General Gupta thought that when the student had done his internship during the course of his medical studies, the need for one year house-surgeoncy later would not be necessary. However, he thought that one year for pre-medical was all too short for Physics, Chemistry and Biology.

DISCUSSIONS ON THE FAILURE RATES IN THE MEDICAL COURSES WITH A VIEW TO REDUCING THE NUMBER OF FAILURES AT PRESENT EXPERIENCED :

Dr. G. Victor from Madurai, who had experience both as a teacher and as an examiner, said that the fault for high percentage of failure lay mostly with the

students. He mentioned the following remedies to bring down the rate of failures :

1. Better selection of students by a competitive examination.
2. Continuous check on the progress of students.
3. Discipline in college; and
4. Better scheme for supervising theoretical and practical work.

Dr. P. N. Wahi suggested that only those students should be admitted to medical colleges, who had aptitude for such training. He said that failure rates could be reduced by (i) improved methods of selection; (ii) improved methods of teaching; (iii) improved methods of examination; and (iv) paying more regard to the day-to-day work of the students.

Dr. Ansari (Hyderabad) pointed out that there was an inadequate number of teachers and they were overworked and the number of students was too large to permit an adequate standard of teaching. He also mentioned that failure rate was high among students belonging to Scheduled Castes/Tribes and Backward Areas, who were admitted not on merit but against reserved seats. Dr Baxi of Jamnagar and Dr. Murthi of Srinagar suggested that there should be regular tutorial groups and a record of the students' day-to-day work should be kept. Dr. C. B. Singh said that first class students took up other professions like engineering because of attractive prospects. He also mentioned that the varying methods used and questions put by different examiners tend to confuse students.

General Chakravarti, giving figures for the last three years, said that the minimum percentage of passes was 31 to 46 per cent and the maximum 71·7 per cent, the average being about 64 per cent.

CREATION OF A SEPARATE ORGANISATIONAL WING FOR MEDICAL EDUCATION AND RESEARCH :

The Delegate from Punjab said that his was the first State in India to adopt a new system, i.e., separation of the teaching cadre from the general cadre of health services. A separate Directorate of Research and Medical Education had been established in Punjab. With the increase in the number of medical colleges and as also the work relating to medical and public health, the Director of Health Services could not properly attend to medical education. He commended the creation of a separate department for research and medical education in the Centre as well as in the States.

Dr. Narasimha Rao raised a point as to whether such a Department should be part of the Directorate of Health Services or directly under the Government (Centre or State). It was agreed that a separate Department was desirable and that it should be part of the Health Directorates.

ORGANISING OF REFRESHER COURSES FOR PRIVATE PRACTITIONERS :

The Chairman explained the importance of organising refresher courses and said that the Government of India had already recommended to the State Governments to hold refresher courses for private practitioners. The Government of India had also offered travelling allowance to practitioners who come from distant places. The Maulana Azad Medical College had already started such a course of 3-4 months' duration with demonstrations in clinical work and lectures twice a week. No additional staff had been employed for this purpose, and therefore the refresher courses caused no great expense to Government.

Dr. Sarbadhikari informed that in Calcutta, meetings were regularly held at the Calcutta Medical Club at week-ends throughout the year. The branches of the Indian Medical Association invited teachers and senior consultants to go once a week to the smaller towns according to a pre-arranged programme. This practice, he said, had proved popular, and the programme should be expanded and strengthened.

Dr. Jacob Chandy (Vellore) mentioned that the refresher courses arranged by them had met with great success. Although they charged fees, the response from medical practitioners from all over India had been gratifying.

Dr. Murthi, Dr. Wahi, Dr. Lingaraju and others expressed the view that so far as big towns were concerned, where local medical practitioners could assemble together without much inconvenience, such course could be easily organised. The difficulty was in rural areas, where practitioners could not have their homes, their practice and patients for any length of time. Ways and means should, therefore, be found to attract them to these courses.

Dr. Narasimha Rao gave his impressions of the courses for general practitioners at Kansas University where such courses were given by specialists who toured the State and went from place to place giving short courses of 2-3 weeks.

Dr. Guha Majumdar (Calcutta) suggested that the courses might be started at University level.

Suggestions were also made that the refresher courses should be arranged not only in the medical colleges, but also in the District Hospitals, and that apart from the college and hospital staff, consultants, government or private, could also be invited to give lectures and demonstrations. There were different views regarding the duration of the course ranging from about a week to 3-4 months at a time. It was also pointed out by some speakers that the staff in most of the colleges was already inadequate and over-worked and that it would put a further strain on them.

The Chairman summing up the discussion said that the need for organising refresher courses was generally recognised and that it could be done either at medical colleges or at other places. He suggested that such courses should be of short duration and should not interfere with the normal duties of the practitioners and that the requirements of the courses should be left to the practitioners themselves so that they could declare their needs. As at present, staff in medical colleges is inadequate for their normal duties, supplementary staff should be provided for this purpose, but the teaching should not be by a separate group of teachers.

CO-ORDINATION BETWEEN COLLEGES AND EXCHANGE OF TEACHERS AND STUDENTS :

Dr. Kasliwal dilated on three main points, namely :
(1) Co-ordination between colleges;
(2) Exchange of teachers; and
(3) Exchange of students.

He considered the first two points very important but was not in favour of the third one. He wanted that specialities should be developed on a regional basis. He thought that visit of teachers of high calibre, who were recognised in their own field, would be a stimulus to Departments visited and advocated such visits on a planned patern. It was pointed out by some speakers that exchange of students was possible only at post-graduate level and not at under-graduate level.

Dr. Vengsarkar said that the main thing was co-ordination between the universities, in order that teachers and students might have opportunities to visit other colleges, not only to give lectures or learn but to make up certain deficiencies that existed at certain colleges.

To an enquiry from Dr. D. D. Dikshit, the Chairman explained that certain centres were developing in certain lines, and had developed excellent facilities for investigation of important problems. Teachers and students would benefit by observing the work in these specialities. It should be possible to make arrangements for them. There was also the question of travelling allowances and other expenses. He wanted all these matters to be examined by the sub-committee and specific recommendations made so that the respective Governments could examine them.

Dr. Sarbadhikari suggested that the visits of Principals to other colleges would result in true co-ordination. This, he thought, would help them to understand and solve each other's problems. He drew the attention of the conference to the University College of Medicine in Calcutta. This was a national college, and the staff of 9 different departments were working together in 4 existing colleges. Certain departments in each of these 4 colleges were recognised for post-graduate teaching. The Post-graduate teachers as well as students moved around from one college to the other, and this, together with the post-graduate medical education centre in Calcutta run by State Government offered excellent facilities for teaching. The Chairman observed that it should be possible for a number of colleges to work together and co-operate in order to make maximum use of the facilities available at one place.

It was also pointed out that with the advent of teaching in regional languages visits and exchanges of this nature may be impeded by difficulty in language. On the other hand such visits may have a more important role to play in achieving co-ordination and it was generally felt that financial arrangements to make such visits possible should be recommended.

During the course of discussion, a suggestion was made regarding the formation of an Association of medical teachers, which received general approval from the Delegates. The Chairman thought that it could not have official cognizance. He said that such an association should be a private professional association along the lines of similar associations already existing, and that it could best be formed by the individual teachers themselves, who could draw up its constitution and get it registered.

Summing up the discussion the Chairman said it was generally agreed that some kind of co-ordination between the colleges was necessary; particularly to develop specialities in various centres. It will also be desirable to facilitate visits. (The word 'visit' is deliberately used)—A visit may be even transfer of teachers, particularly internees and post-graduate students. We may recommend that in places like Calcutta, Bombay, Madras and Delhi, where there are more than one medical college, such co-ordination in teaching may be effected on the lines of the Calcutta University of College of Medicine. This would naturally raise the question of finance, and suitable financial help for such exchange or transfer may be arranged by authorities concerned.

CRITERIA FOR THE SELECTION FOR ADMISSION OF STUDENTS TO MEDICAL COLLEGES :

The Chairman said that this item was previously discussed in the Medical Education Conference of 1955. He suggested that the delegates as academic and enlightened men should discuss the matter objectively and make recommendations with a view to getting the best results. He reminded them that the question of failure rates had already been discussed, and, therefore, the members should cover only new points. He also suggested that the responsibility for admission should be primarily vested in the head of the Institution assisted by his Faculty.

The Chairman gave details of an analysis made of the last 3 years' results, of two lists of students. It was found that with very few exceptions, there was no difference between failure rates of students selected by a competitive entrance examination and those selected on the basis of marks obtained at the University Examinations.

Various speakers outlined in detail the experiences with regard to different criteria for admission at their colleges. The difficulties with regard to both pre-entrance competitive examination, as well as selection on the basis of marks obtained in the University were outlined. With differing standards of the various Universities, the different phases at the various Universities in the use of regional languages, the difficulties of outlining an objective of pre-entrance examination as well as a marking system and the various experiences gained in using both types of selection criteria were given with considerable detail. Stress was also laid on the difficulty of achieving a homogeneous group of students and more than one Principal brought out the fact that they were merging two distinct groups of students in many medical colleges.

One Principal in his analysis informed the House that with the advent of a competitive examination, the number of first and second division students gaining entrance into the medical colleges had considerably declined and the quality of students had become "poorer".

The experiences of other countries were also mentioned specially those of Canada, U.K. and the U.S.A.

The Chairman mentioned that an analysis was made of the figures of admission of the last 3 years. It was found that with very few exceptions in the lowest rung, i.e., there was no difference between list of students selected on the baisis of a competitive entrance examination, and those selected on the basis of marks obtained at the University examination.

The Chairman emphasised the constitutional and the legal position with regard to admissions and pointed out that all the present difficulties were mainly due to the fact that the number of applicants far exceeded the number of seats available.

He summed up the discussion in these words, "The general feeling appears to be that the recommendations of the previous Conference should, as far as possible, be implemented. More responsibility for admission of students should be vested in the authorities of the colleges than on any outside persons. We should generally be guided by the results of the University Examination but the alternative would be competitive examination".

METHODS AND MEANS OF STIMULATING RESEARCH IN MEDICAL COLLEGES :

Dr. Balakrishna Rao said that the close co-operation between I.C.M.R. and the Research Workers should be taken advantage of. He explained the difficulties of research workers in the matter of appointments to teaching posts, because the Public Service Commissions and the Universities would not accept research experience in lieu of teaching experience even in part. The Research Workers, therefore, tried to branch off to appointments where there was no research as there was no future for research workers as such.

Dr. Bagchi suggested that brilliant students (1st Class M.Sc.s in Physics and Chemistry) should be selected for admission to every Medical College on stipend basis. They in course of time will be our future research workers.

Dr. Casberg strongly advocated that graduates with Ph.D. in basic sciences be accredited as members of the medical faculties. He emphasised that research is a teaching technique and research could not be regarded as a special separate entity of its own.

Dr. Chandy suggested that research especially in medical colleges should be along two lines, viz., clinical research and fundamental research. He also advocated the necessity of arrangements for adequate medical recording. Without this basic necessity it would not be possible to use the large amount of clinical and other material available at hospitals and medical colleges.

Dr. Sachdev said that there should be a research committee in each of the colleges, which could also invite research workers from outside and that this committee should be responsible for the allotment of funds. He also suggested that the teachers should be required to produce a requisite number of papers, failing which they should be debarred from further promotion. Dr. Anand suggested that a Central Research Laboratory as in Amritsar should be started where the teachers could take part in research and have the benefit of the services of Biochemists and Biophysicists.

Dr. Sarbadhikari of Calcutta described the method adopted by the Medical Colleges in Calcutta, where research workers were paid Rs. 300/- p.m. for 2 years, and for a further year if recommended by the teachers under whom they were working. He considered that there should be no strict demarcation between duties of a teacher and research worker, and given an opportunity, they were bound to produce results in foreseeable future.

Dr. Gujral felt that it was necessary to have whole-time teachers. He complained about the shortage of chemicals and reagents, and inadequate arrangements for animal houses in colleges.

The Chairman advised the delegates that foreign exchange involved for obtaining chemicals and reagents was very small and the Health Ministry had undertaken that they would assist in every way the provision of needed foreign exchange for this purpose.

Dr. C. B. Singh suggested the establishment of a Research Centre in each Medical College like the one in Kanpur, where all facilities like electronics, animal house, etc., existed.

Dr. Kasliwal said that they were not getting cases for postmortem. He suggested legislation on this subject. The Chairman said that legislation was not possible and that all means be used to persuade people to agree to postmortems.

In reply to a suggestion from Dr. Bagchi the Chairman stated that 2 or 3 students should be attached to Medical graduates, who were well qualified in the basic sciences, so that they could be the future research workers and that stipends should be given to them.

The most important thing for research, according to General Gupta, was to have full-time research teachers who would inculcate and stimulate research to a high degree. The records of such work could be kept by the professor. History of Medicine was a study well worth making.

Dr. R. N. Chaudhuri expressed his opinion that research qualifications should be an essential condition for appointment to teaching posts. He advocated the institution of a research cadre. He further stated that the preparatory phase between the period of internship and residentship should be improved because the medical student was often ignorant of many things. He suggested the establishment of research units in medical colleges and State Research Councils to co-ordinate work in the different Medical Colleges.

Amongst the various other points emphasised by a number of speakers was the fact that research experience should be regarded as equivalent to a teaching experience for appointments to teaching posts. The Chairman emphasised that the employer could introduce this in the requisitions sent to the Public Service Commission for recruitment, and that there appeared to be no difficulty in the Public Service Commissions agreeing to this. There was general agreement on the necessity of strengthening the medical recording system in the colleges and hospitals as these would be the foundation for research work both for undergraduates and for graduates. A number of speakers also stressed the lack of actual experience that students, both post-graduate

and under-graduate, obtained in research techniques. It was generally agreed that research in medical colleges should be utilised as far as possible in the teaching of students, and that there should be no distinction between teachers and the research workers in teaching departments.

With regard to the administration of research, a number of points were made including the organisation of a special research committee in medical colleges, a special research cadre on a national basis, State Research Councils, and financial assistance for equipment and supplies to undertake certain research programmes in addition to those supplied by the I.C.M.R.

A number of Principals also pointed out the basic deficiencies in education, namely insufficient background of mathematics, statistics, of methods of analysis and experimental designs, both in the teachers and in the under-graduate and post-graduate students in the medical colleges. It was generally felt that greater financial assistance be given to research workers to ensure continuation in the research work through stipends and security of tenure for a specific period of time to enable them to place maximum attention to the projects with which they are associated.

STRENGTHENING OF THE TEACHING HOSPITAL UNITS :

The Chairman introduced this item by saying that most of the hospitals in India are Government or Semi-Government institutions which are governed by the rules of the respective authorities. Nevertheless, he said, there was room for a great deal of improvement in these hospitals. He invited Dr. McGibony to introduce discussion on this item.

Dr. McGibony said the paper circulated was only a check list mentioning items which should be considered. He hoped that a more elaborate paper would be circulated later on. He emphasised the need for good administration of both medical colleges and the attached hospitals.

The Chairman informed the members of a proposal to hold seminar in various regions, to stimulate discussions on better planning, organisation and services in hospitals.

Dr. Casberg suggested that there should not be too much service load on a teaching hospital.

Dr. Vengsarkar referred to overcrowding in outdoor departments of teaching hospitals. He suggested that the General hospitals and dispensaries should be strengthened and only cases of special nature should be referred to teaching hospitals.

General Chakravarty said that under existing conditions in the country, the only possibility seemed to be to earmark a certain number of wards in a hospital for teaching purposes, where special cases useful for teaching could be referred.

Dr. Prem Chand (Amritsar) did not agree that only special cases should be referred to teaching hospitals, as that would deprive the students of learning about common types of diseases. The solution was in limiting the number of patients to be treated in a teaching hospital according to the capacity of the teachers.

Dr. Chandy emphasised the need for strengthening the out-patient service since there was less than 1 per cent bedded facility available in the country.

Dr. Lingaraju said that while the load of the teaching hospitals should be reduced, the students should also work by providing domiciliary and midwifery services, which should be taken as part of the training programme.

The Chairman agreed that there was excess load on teaching hospitals, where a large number of cases were referred only because facilities were not available elsewhere. The remedy lay in increasing the number and raising the standards of the hospitals at peripheral level; the government should develop such hospitals and provide an adequate number of specialists in each so that a great deal of the present routine load of the teaching hospitals would be relieved.

RELATIONS BETWEEN THE COLLEGES AND INDIAN MEDICAL COUNCIL :

The Chairman remarked that several authorities were concerned with the subject of medical education. A large number of medical colleges had been established and more were coming up. Most of them were government or Municipal institutes. There were the Universities, with which the colleges were affiliated, and the Medical Council of India, which is a statutory body established by an Act of Parliament. Each authority had its own distinct sphere of function and it was necessary to ensure harmonious functioning of all these authorities. Earlier mention had been made that the Medical Council of India was often rigid. He emphasised that the recommendations of that body were to be regarded as recommendations and not as a definite law, which could not be infringed. There should be no real difficulty in the Universities, government and the Medical Council working together. An intelligent appreciation to each of the duties of the others would solve the problems, he said.

Dr. Kasliwal said that the Medical Council should continue to conduct inspections of medical colleges, without which proper inspection of the examinations would not be possible. He suggested an amendment to the Indian Medical Council Act, if necessary, to give this power to the Council. Dr. Madan Prasad supported Dr. Kasliwal. General Chakravarty was of the view that inspections by the Inspectors of the Medical Council of India were useful and helpful to the various medical colleges. Dr. Mehta wanted that the powers of the Medical Council of India should be defined once for all without any ambiguity in them. It was also suggested that freedom should be given to the Universities to define the qualifications of teachers and also the syllabi.

It was generally agreed that every effort should be made to remove any misunderstandings between the various authorities responsible for maintaining the standards of medical education. The general feeling was that valuable work had been done by the Medical Council of India.

The Chairman undertook to communicate the views expressed to the various authorities concerned.

ADDITIONAL ITEM :

The Chairman made a reference to the question of indigenous drugs. Referring to the meeting of the Central Council of Ayurveda Research, he said that the meetings felt that adequate investigation on scientific lines, mainly pharmacological, should be carried out in as many medical colleges as possible, on drugs which have a wide use and about which there is an impression that they are effective in certain diseases. He advocated that if a few drugs could be taken up by each department of pharmacology for complete investigation, we should very soon be able to cover a large field in this area. He emphasised the importance of regarding this problem on a national basis.

MEDICAL EDUCATION CONFERENCE, 1958

The Medical Education Conference held at New Delhi on the 15th March, 1958 discussed ways and means for increasing the number of teachers in the country.

The following resolutions were passed at the Conference :

Resolution I—This Conference having reviewed the efforts so far made to implement the scheme of giving subsidy to State Governments for setting up full-time teaching units in Medical Colleges, regrets to note that no progress has been made so far. The importance of the subject is reiterated and the Central and State Governments should take immediate steps to set up as many full-time teaching units in all departments of medical colleges as possible. While the Central Government have proposed to grant a subsidy for the duration of the Second Five Year Plan period, it may be noted that the expenditure on this scheme will become committed expenditure at the end of the Plan period, and therefore the question of resources for continuing the scheme, would be considered by the Planning Commission and other authorities concerned, in the light of the total resources available to the Centre and States.

Resolution II—The Conference is of the view that one of the main reasons for the shortage of teachers especially in non-clinical subjects is the inadequacy of salaries. It considers that the salary scales should be raised to a level sufficient to attract suitable persons to devote themselves to a teaching career. For the encouragement of post-graduate medical education and research the following scales are recommended as the minimum for medical teachers subject to further consideration in the III Plan period.

	Rs.	
(a) Professors ...	1,000-1,400	with a non-practising allowance of Rs. 250/- p.m.
(b) Additional or Associate Professors	800-1,250	with a non-practising allowance of not less than Rs. 250/- p.m.
(c) Readers/Assistant Professors	500-30-800	plus a non-practising allowance of Rs. 150/- p.m.
(d) Junior Teachers	250-600	plus a non-practising allowance of Rs. 150/- p.m.

(While Demonstrators may be started on the minimum of Rs. 250/- p.m., Lecturers may be given a higher initial pay of Rs. 450/- p.m.).

The Conference also considers that to prevent teachers from migrating from one college to another the above scales may be adopted uniformly in all the medical colleges.

Resolution III—The Conference views with concern that in many Medical Colleges in the country, there is not adequate number of teachers, especially for non-clinical subjects. The Conference is apprehensive that with the opening of additional medical colleges and expansion of the existing ones, the position may deteriorate still further. The Conference, therefore, recommends that urgent steps should be taken to remedy the situation. Among other measures, the following are suggested :

(i) Extend the age of retirement of teachers in medical colleges who are physically and mentally fit;

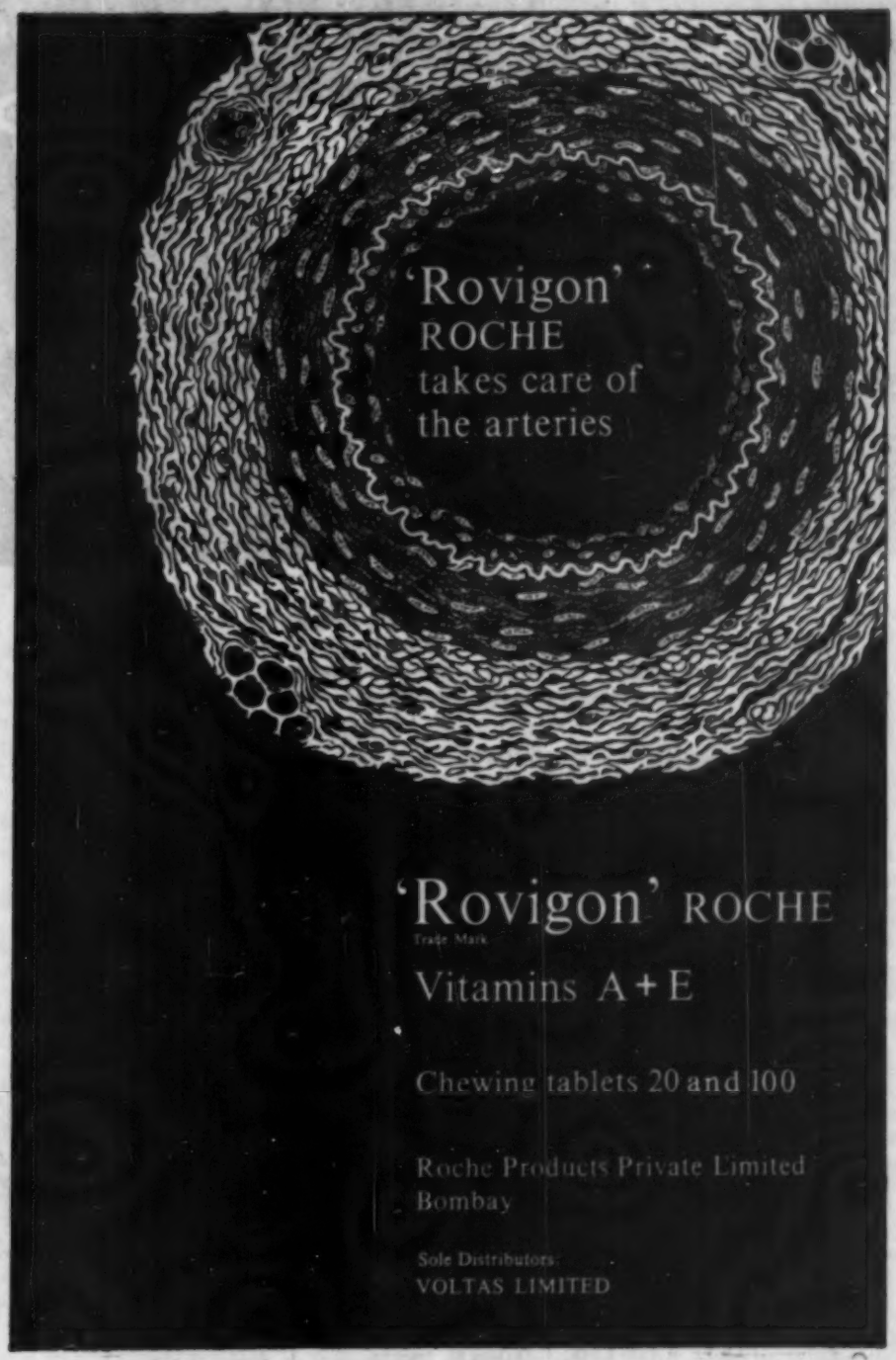
(ii) Employ retired former teachers on a full-time or part-time basis as may be suitable in individual cases;

(iii) Encourage promising young graduates to take up the teaching line by awarding suitable fellowships for taking junior teaching assignments and working for post-graduate degrees. The award of such stipends should be linked up with a guarantee that the recipients would serve as teachers for a certain number of years. The Central Government should consider giving financial assistance towards these fellowships;

(iv) In view of the present position the Indian Medical Council and the Universities should consider the question of relaxation of conditions for appointment of qualified and experienced teachers, in individual cases when presented to them, particularly when properly qualified and experienced teachers are available after advertisement on all-India basis;

(v) That an integrated scheme of fellowship for training abroad covering all the medical colleges in the country and in all the States may be drawn up by the Central Government (towards which assistance from foreign agencies may be obtained);

(vi) The Universities should be requested to consider relaxation of territorial and domiciliary restrictions in the matter of the award of post-graduate degrees so that students from one University may be enabled to take up post-graduate qualifications in another University.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NOTES AND NEWS

The World Medical Association

Dr. Heinz Lord, a practising surgeon of Barnesville, Ohio, has been elected by the General Assembly to succeed Dr Louis H. Bauer of New York City as Secretary General of The World Medical Association from January 1, 1961.

Dr. Lord was educated in Hamburg, Germany and studied medicine in the Universities of Zurich, Berlin and Hamburg, graduating from Hamburg University in 1942. While working at a Hamburg hospital he was arrested for activity in a resistance movement and confined in a German concentration camp until the end of the war.

In 1947 Dr. Lord resumed his medical career at the Hamburg-Barmbek General Hospital where he was recognised as a surgical specialist in 1952 and a urological specialist in 1953. In 1954 he migrated to the United States where he took three additional years of surgical training at the Bridgeport Hospital, Bridgeport, Connecticut. In 1957 he received his license to practise medicine in the United States.

Dr. Lord has taken an active part in medical organisational work at the local and international levels since 1949. He is a Fellow of the International College of Surgeons; a member of the American Medical Association and a member of the Ohio State Medical Society and his county society. From 1949 to 1953 he was Chairman of the Hamburg chapter of the Marburger Bund (German Employed Doctors' Federation). Under his Chairmanship the economic and social conditions of the doctors employed by hospital were greatly improved.

The retiring Secretary General, Dr. Louis H. Bauer was appointed to that position in 1948. On January 1, 1961 he will become Consultant to The World Medical Association.

Health under Third Plan

The Union Health Minister, Mr. D. P. Karmarkar, said on October 28, that the allocation for Health in the Third Five-Year Plan was a 'disappointment'.

Mr. Karmarkar was delivering the presidential address at the eighth meeting of the Central Council of Health at Jaipur.

The Minister said that the distribution of the allocation of Rs. 300 crores had not been an easy matter. The continuance of stress on the preventive aspects of health activity had resulted in more than half the amount being appropriated by water supply and communicable disease programmes and the cutting down of many other activities.

In its essentials, the Third Plan, he said, would be one of extension of water supply and drainage facilities, control of communicable diseases, family planning and extension of rural services through primary health centres. The remaining items would be in the nature of supporting programmes. It was, therefore, incumbent on the States to husband their resources in such a manner as to make full use of them and streamline their organisational structure to ensure quick and successful execution of the schemes.

An Institute of History of Medicine

Mr. Humayun Kabir, Union Minister for Scientific Research and Cultural Affairs, inaugurated on November 6 a two-day conference of leading physicians, scientists and educators who met at New Delhi to discuss a proposal to set up an institute of the history of medicine.

The proposed privately sponsored institute to be located near Delhi will be a post-graduate research centre.

Mr. Kabir in his inaugural speech said that such an institute would be of great ultimate practical value. "The idea of bringing knowledge of different systems together is extremely attractive", he added.

Among those who addressed the conference were Prof. M. S. Thacker, Director-General, Council of Scientific and Industrial Research, and Dr. B. Mukerji, Director, Central Drug Research Institute.

Aero-medical Studies

The need for further intensifying research and studies in the various fields of aviation medicine and for continuously improving flying aids for modern jet pilots was emphasised at Bangalore on October 31 by late Air Marshal S. Mukherjee, Chief of Air Staff.

Late Air Marshal Mukherjee, who was inaugurating the two-day meeting of the Aero-Medical Society at the I.A.F. Training Command Headquarters at Hebbal, referred to the rapid growth made by aviation in the country and expressed his satisfaction that more and more scientists, engineers and doctors were associating themselves with flying.

Dearth of Doctors in Orissa

Dr. Ram Prasad Misra, Orissa's Health Minister, said on October 27, that the State Government was taking steps to secure the services of 300 doctors from West Bengal on "deputation" basis to meet the present shortage of doctors in the State.

Dr. Misra, who was answering a question in the Assembly, said out of a total sanctioned strength of 857 assistant surgeons for the whole of the State by the end of the Second Plan period there were at present only 572 assistant surgeons, leaving vacancy of 285.

In order to meet the shortage, the Government were invariably re-employing retired medical officers and private practitioners who applied for service under Government. Advertisements for doctors were issued on all-India basis with attractive terms of employment. So far 19 medical officers had been re-employed and 16 doctors from West Bengal had been appointed.

Thorough Check-up of 50,000 Children

The Rotary Club of Gwalior has decided to arrange free medical advice to 50,000 children of the town, of the age group of 3-12, when a 'thorough check-up' of their ear, nose and throat will be made, according to the secretary of the local unit.

Home Treatment of Tuberculosis

A scheme of 'Home Treatment' of tuberculosis patients by segregating them in their homes and treating them has been launched in the Cuttack city in the first instance, Orissa's Health Minister told the State Assembly on November 1.

The Health Minister said it had now been found that it was possible to cure tuberculosis patients by what he called 'home treatment'—keeping the patient segregated. Moreover, as it was not possible to hospitalise all the patients under the existing conditions, the Orissa Government had launched on a scheme of home treatment of tuberculosis patients and the scheme was now being implemented in Cuttack city in the first instance.

10 Chest Clinics for West Bengal

The Union Rehabilitation Ministry is understood to have approved of a scheme for establishment of 10 chest clinics in different parts of West Bengal. The scheme will be given priority as it is expected to help considerably the drive for eradication of tuberculosis from among the East Bengal refugees inhabiting various camps and colonies in the State. Sanction has already been accorded to the proposal for setting up even such clinics one each at Barrackpore, Serampore, Tollygunge, Jalpaiguri, R. N. Tagore Road, Bon Hooghly and Behala. The total amount sanctioned for these T.B. clinics is estimated at Rs. 11·32 lakhs.

Family Planning & Blood Bank Campaign

Mr. Y. B. Chavan, Chief Minister of Maharashtra, inaugurated the one-month family planning and blood bank campaign in the Maharashtra State, at the Cama and Albless Hospital for Women and Children at Bombay on November 6, by declaring open a new family planning centre and a blood bank in the hospital premises.

The inauguration marks the organising of the family planning and blood bank programme throughout the State in its intensified fold at the various Government hospitals, centres and banks.

The aim of the Family Planning campaign is to open more family planning centres, activise the existing ones and get over a lakh of people to take advantage of such centres and have 15,000 operations of sterilisation done during the period of campaign.

Under the blood bank drive, it is proposed to collect an aggregate of 100 lakh c.c.s during this short period.

DONATION FOR EYE BANK

On the same occasion, Lady Duggan presented a cheque for Rs. one lakh to the Chief Minister as her contribution for the Government Eye Bank in memory of her late husband, Col. Sir Jamshedji Duggan. The amount will be used for the purpose of a separate structure and for equipping the eye bank.

Thanking Lady Duggan for her donation, Mr. Chavan said that the new eye bank building would be the fittest memorial to the late Col. Sir Jamshedji Duggan, who had been a leading eye surgeon of international repute.

Child Care—A National Responsibility

Child welfare today is a national responsibility and is an integral part of the nation-building programme.

November 14 celebrated the Children's Day when the country was reminded of its duties towards promoting the mental and physical well-being of the children on which depends the harmony of tomorrow's world.

Children's Day is being observed all over the world since 1956 as a day of forging worldwide fraternity and understanding between children and of activity devoted to the promotion of their welfare.

Madras Medical Council

The Madras Medical Register for 1960 is under preparation. Registered medical practitioners under the Madras Medical Registration Act, 1914 are requested to intimate any change in their registered addresses to make necessary corrections in the Register. They are also requested to intimate the full name, register number and address of any practitioner appearing in the Register for 1959 who, to their personal knowledge, is dead.

[All qualified doctors of the different States are also advised to have their change of address noted and corrected in the registers of their respective State Medical Councils.—ED., *J. Indian M. A.*]

West Bengal Ambulance Brigade Golden Jubilee

The St. John Ambulance Brigade No. 2 (West Bengal) District is celebrating its Golden Jubilee on the 9th, 10th and 11th December 1960. As many physicians had been connected with Brigade work in the past, the members of the Golden Jubilee Celebration Committee wish very much to extend to them an invitation to join the Reunion on the 11th December 1960. They are requested to contact the Brigade Headquarters, 5 Government Place North, Calcutta 1, where cards are obtainable.

Calcutta Medical College Re-union, 1960-61

The 27th Session of the Medical College Re-union will be held on 29th to 31st January, 1961, under the presidentship of Dr. A. C. Ukil.

All ex-students of Calcutta Medical College, who are willing to take part in it are requested to contact the Hony. Secretary immediately.

REVIEWS

My Path in Science—By Vladimir Filatov, translated from the Russian by George H. Hanna; 1957, Foreign Languages Publishing House, Moscow; National Book Agency (Private) Ltd., Calcutta, 12; 7¼"×5", pp. 182; Re. 1·25.

The author, who died in 1955 and was a noted Soviet ophthalmologist and a life-long fighter against blindness,

gives in this book an account of some of his work. The six chapters into which the volume is divided are: cornea transplantations; the tube flap graft; glaucoma and its treatment; trachoma; saliva instead of tears; treatment for seborrhoea of the meibomian glands; first aid for eye traumas.

Though written in a lucid style this is by no means an easy book because of the technical nature of the subject. The average Russian background of scientific knowledge must be high indeed as this is meant for the general reader.

S. P. CHAUDHURY

Dermatologic Medications—By M. R. Lerner and A. B. Lerner. The Year Book Publishers, Inc., 200, East Illinois Street, Chicago, U.S.A. 2nd Edition, 1960; 5" x 5½", pp. 208; $6·00.

In recent years dermatologic therapy has been revolutionised, particularly due to the advent of antibiotics, steroids, and tranquillisers. Physicians now-a-days use very few prescriptions that are to be served by pharmacists. There are various brands of the same drug that are to be chosen by the treating physician. The book contains a list of most useful drugs and gives indications for use, doses and mechanism of action. Many formulae are given which will be of great help in choosing a drug or discarding another which has shown adverse effects or proved not very effective. In fact, the book will be of immense help to the physicians in adopting a rational and useful approach to treating diseases of the skin.

The price appears to be a little high for the size of the book.

B. N. BANERJEE

Year Book of Drug Therapy 1959-60 Series—Edited by Harry Beckman. Year Book Publisher Inc., Illinois Chicago; 5" x 7½"; pp. 570; $8·50.

Rapid strides in the pharmaceutical industries make it rather difficult now-a-days for medical men all over the world to keep abreast of up-to-date information regarding recent developments. For several years past, *Year Book of Drug Therapy* has been rendering a great service to the medical profession in appriaing them of the current ideas. The present volume, as in the past, has been excellently compiled and edited and the many interesting and thought-provoking items came as editorial comments on the articles summarised.

The new features of this volume are the two new sections—"Basis for Judgment of New Drugs" and "The Year's New Drugs". Both the sections will be highly appreciated by the practitioners and so will be the reasons given for their inclusion.

H. CHAKRAVARTI

OBITUARIES

Dr. Chandra Shakher Prasad Chaturvedi

Dr. Chandra Shakher Prasad Chaturvedi was born in 1911 in a family of medical men of Rewa, his father and grandfather both being doctors of repute of their times.

After completing his early education in Rewa and Allahabad, he joined the medical school at Indore and passed in 1936. Since then he had been in service in Rewa State and later on, Vindhya Pradesh, till the year 1950. He retired as a Captain from Vindhya Pradesh forces and started private practice at Rewa, which he continued till he developed a malignant growth in the nose in March 1960 and expired on September 11, 1960.

He was very sincere to his patients and the immense pains he took for them earned him great popularity.

He was a member of the Rewa Branch, I.M.A. and took great interest in its activities.

Dr. K. N. Upadhyay

Dr. K. N. Upadhyay was born at Bareilly, U.P. and died of renal carcinoma on September 25, 1960 at Delhi.

He qualified from Agra Medical School and then served the District Board, Gonda (U.P.) for about 2 years. Thereafter he joined Ram Bilas Charitable Hospital, Muzaffarnagar, as Medical Officer in charge, where he became popular amongst the people and established a lucrative practice. He also went to Bangalore and received training in Ophthalmology.

He was kind-hearted and amiable and was an old member of I.M.A.

Dr. V. S. Sambasivam

Dr. V. S. Sambasivam of Namakkal expired on August 31, 1960 at the age of 59. A member of the Salem Branch of the Madras State ever since its inception, he evinced keen and continuous interest in all its activities. In his death the profession has lost a respected colleague and the public a beloved doctor who served them ceaselessly until his last day for over thirty-five years.

Dr. E. K. Raman Pillai

Dr. E. K. Raman Pillai died on 22nd July 1960 at Quilon at the age of sixty-eight. Until his death, he continued in active service to the people of Central Travancore and to the medical profession as President of the Kerala State Branch of the I.M.A. It was his long cherished wish, as in the case of many in the profession, to die in harness.

Dr. Pillai joined as an assistant surgeon in the State medical service in Travancore and retired as a surgeon after 25 years. His work as a medical practitioner at Quilon after retirement brought him greater fame and

riches than his long service under Government. Dr. Pillai represented a type fast disappearing from the profession, the efficient G.P. well posted in modern advances in scientific medicine, taking a lively interest in all social and cultural activities around him and therefore loved and respected by the people among whom he lived.

Dr. Pillai was born in a rich and influential Nair family in Central Travancore. An active patron of music, drama and Kathakali with a good grasp of these arts, he organised cultural groups to promote these arts. His practical experience as a great physician combined with his skill as a writer and speaker made him very effective as a promoter of health education, and an ardent champion of preventive medicine.

He was an active member of the State Medical Association and had been the President of the Quilon Branch for many years. As president of Kerala State Branch, he had many plans for strengthening the Association but his progressive loss of health during the last few months stood in the way.

Col. Shankerlal Gargye

Col. Shankerlal Gargye, born in 1899 in the Mathura district of U.P., suddenly expired on 3rd October 1960 in Gwalior.

After qualifying in medicine he went to England for higher studies and returned in 1929 after passing the M.R.C.S. & L.R.C.P. examinations. He worked as Physician, J. A. Hospital and District Medical Officer up to March 1936, was then appointed as Physician and Superintendent, Civil Hospital, Ujjain. He was appointed Physician to Their Highnesses, in Gwalior State in the year 1937.

He entered military service in 1938, and was appointed Director, Military Medical Services, and Chief Medical Officer and I.G. Prisons, Gwalior State in 1944. He worked in these capacities till 1948. During this period he was awarded a Gold Medal and Rs. 2,000/- in cash for meritorious services.

He was then appointed Director, Health Services and I.G. Prisons, of Gwalior in 1948 and retired in November 1955. It was he who laid a sound framework for the development of Medical and Nursing Education and Medical and Nursing Services in this State. Apart from other activities in the medical sphere he was responsible in particular for the establishment and organisation of the two Medical Colleges and Hospitals in Gwalior and Indore. At the request of Bhopal Government, the Chief Minister, Madhya Bharat sent Col. Gargye to assist the Government of Bhopal in starting a Medical College. His integrity and honesty was beyond doubt. He was an able administrator, strict disciplinarian and soft at heart.

He was nominated as an alderman in the Municipal Corporation of Gwalior in the year 1958 by the Government of Madhya Pradesh.

In 1959 January he was appointed as an Hony. Adviser to the Government of Jammu and Kashmir for establishing a Medical College, in Srinagar. After completing his mission within a short span of 11 months, he returned to Gwalior on 30th October 1959. His services there were highly appreciated by the Prime Minister, Bakshi Ghulam Mohammad and the people.

In the year 1960 he was elected President of Jiwaji Club, Gwalior, Vice-President of the Madhya Pradesh branch of the Indian Medical Association, and the organiser of its Gwalior branch. He always took very active interest in the branch and very much desired to have a building of its own.

COL. SHANKERLAL GARGYE

DR. V. R. SHRIKHANDE

Dr. V. R. Shrikhande

Born in Kolhapur State, Dr. V. R. Shrikhande completed his school education in Kolhapur and medical studies in B. J. Medical School, Poona in the year 1918. He entered the Government Medical Services as Medical Officer, Sangola Dispensary in Sholapur District. In the year 1921 he entered the Pandharpur Municipal Service as an Assistant Medical Officer and worked till 1933. During this period his devotion to duty and selfless work in the cause of the ailing humanity impressed the public and the Municipality. In 1933, he was appointed Medical Officer, Municipal Dispensary and Hospital, by the Municipality as a reward for his hard and humane work, though the post was meant for medical graduates.

As the Chief Medical Officer he became more widely known for his professional acumen. He was awarded a Kaiser-I-Hind Bronze Medal by the government. He led a pious and conscientious life.

After his retirement in 1955 he started a private maternity and general hospital. As an owner-director of this institution, he worked hard and without respite. He went to Bombay for some rest. On his return journey he met with a railway accident at Dhond Station and succumbed to the injuries on October 2, 1960.

His death is mourned by thousands in his town and in the surrounding areas.

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SUPPLEMENT
Journal of the Indian Medical Association

Vol. 35, No. 11 CALCUTTA December 1, 1960

ASSOCIATION NOTES

I.M.A. CENTRAL COUNCIL—*Proceedings of the 80th Ordinary Meeting of the Central Council of the Indian Medical Association held at Indore on 29th December, 1959.*

Members Present : 1. Dr. H. N. Shivapuri (Lucknow)—President (in the Chair); 2. Dr. C. O. Karunakaran (Trivandrum)—Immediate Past President; 3. Dr. Shantilal C. Sheth (Bombay)—Vice-President; 4. Dr. S. N. Acharya (Puri)—Vice-President; 5. Dr. A. P. Mittra (Delhi)—Hon. General Secretary; 6. Dr. P. C. Bhatia (Delhi)—Hony. Joint Secretary; 7. Dr. Salil Dutt (Calcutta)—Hony. Joint Secretary; 8. Dr. D. S. Mehra (Delhi) —Hony. Assistant Secretary; 9. Dr. R. N. Gupta (Lucknow)—Hony. Assistant Secretary; 10. Dr. B. N. Chowdhury (Gauhati)—Hony. Assistant Secretary; 11. Dr. H. S. Chakravarti (Calcutta)—Hony. Asst. Editor, Journal, I.M.A.; 12. Dr. N. Banerjee (Calcutta)—Hony. Secretary, Journal, I.M.A.; 13. Dr. P. D. Daftary (Bombay); 14. Dr. S. Chandhury (Giridih); 15. Dr. Makhon Lal Ghose (Nabadwip); 16. Dr. K. K. Dutt (Ghugudanga); 17. Dr. R. K. Shah (Bombay); 18. Dr. V. G. Tople (Akola); 19. Dr. Sukomal Sen (Calcutta); 20. Dr. Haranath Mukherjee (Dhanbad); 21. Dr. V. K. Khare (Jabalpur); 22. Dr. A. J. Divatra (Ahmedabad); 23. Dr. G. C. Koley (Chapra); 24. Dr. D. Roychoudhury (Calcutta); 25. Dr. R. N. Chatterjee (Jabalpur); 26. Dr. Ram Rup Prasad (Kasba, Purnea); 27. Dr. U. N. Barooah (Gauhati); 28. Dr. S. S. Mhalas (Jalgaon); 29. Dr. Pradyot Kumar Roy Chowdhury (Barnipur); 30. Dr. Bal Raj Varma (Ludhiana); 31. Dr. Byomkesh Ghosh (New Barrackpur, Madhyamgram); 32. Dr. Amarendra Nath Roy (Nungi, Batanagar); 33. Dr. Souren Sengupta (Calcutta); 34. Dr. C. Arumugam (Coimbatore); 35. Dr. A. D. Mukherjee (Calcutta); 36. Dr D. K. Gupta (Lucknow); 37. Dr. C. Nathamuni Naidu (Ambur, Madras); 38. Dr. Chamanlal M. Mehta (Bombay); 39. Dr. C. S. Thakar (Bombay); 40. Dr. M. M. Siddhu (Lucknow); 41. Dr. A. K. Sen (Patna); 42. Dr. S. N. Roy (Dhanbad); 43. Dr. A. D. Daftary (Bombay); 44. Dr. V. K. Toraskar (Bombay); 45. Dr. M. A. Panwala (Bombay); 46. Dr. S. N. Saxena (Kanpur); 47. Dr. B. D. Goyal (Ahmedgarh); 48. Dr. D. P. Jayaram (Mysore State Branch, Bangalore); 49. Dr. M. Guru Das (Bangalore); 50. Dr. B. G. Mehta (Ahmedabad); 51. Dr. M. K Pandya (Ahmedabad); 52. Dr. S. Sivanappa (Chitradurga); 53. Dr. H. V. Upadhye (Dharwar); 54. Dr. I. G. Bhatt (Ahmedabad); 55. Dr. Gour Hari Dutta (Ranaghat); 56. Dr. C. M. Patwa (Nasik); 57. Dr. Ravindra Paul Chopra (Maholi, U.P.); 58. Dr. B. N. Mehrotra (Lucknow); 59. Dr. Mangaram Kalani (Lucknow); 60. Dr. K. Damodaran (Asansol); 61. Dr. Sailen Chakravarty (Calcutta); 62. Dr. Sailen Bose (Calcutta); 63. Dr. S. S. Rao (Cochin); 64. Dr. M. Younus (Bhagalpur); 65. Dr. S. S. Srivastava (Jabalpur); 66. Dr. Nitai Charan Banerji (Tarakeswar); 67. Dr. K. L. Chatterji (Barrackpore); 68. Dr. G. S. Wagle (Indore); 69. Dr. M. Vasudeva Rao (Hyderabad); 70. Dr. P. Manikyaraju (Hyderabad); 71. Dr. R. B. Davare (Hyderabad); 72. Dr. N. Lakshmi Kanta Sastry (Vijayawada); 73. Dr. Arvind M. Shah (Bombay); 74. Dr. Suresh C. Sheth (Bombay); 75. Dr. A. V. Huilgol (Hubli); 76. Dr. R. K. Chakravarty (Calcutta); 77. Dr Jiban Krishna Mazumdar (Calcutta); 78. Dr. S. N. Chatterjee (Budge Budge); 79. Dr. Probhat Kumar Banerjee (Calcutta); 80. Dr. Sisir Sengupta (Calcutta); 81. Dr. S. K. Mukherjee (Jabalpur); 82. Dr. Nishit Chandra Ganguli (Calcutta); 83. Dr. Priya Lal Ghosh (Calcutta); 84. Dr. Bireswar Sen (North Howrah); 85. Dr. T. J. Lalwani (Bombay); 86. Dr. Mrinal Nandi (Calcutta); 87. Dr. Debesh Mukherjee (Calcutta); 88. Dr. Nirode Bijali Roy (Calcutta); 89. Dr. T. K. Babur (Bombay); 90. Dr. R. A. Amesur (Bombay); 91. Dr. T. K. Tarafdar (Berhampore); 92. Dr. Satwant Singh (Kanpur); 93. Dr. C. M. Aga (Bareilly); 94. Dr. B. V. Mulay (Sholapur); 95. Dr. B. K. Nagar (Bagen); 96. Dr. R. P. Joshi (Gadag); 97. Dr. Sukumar Ukil (Darjeeling).

I. *Confirmation of the Proceedings of the Annual Meeting of the Central Council held at Indore on the 25th and 26th December, 1959.*

The Proceedings as circulated were adopted (after certain necessary corrections) as proposed by Dr. M. M. Siddhu (Lucknow) and seconded by Dr. S. S. Rao (Cochin).

II. *Delegation of all or some of the powers of the Central Council to the Working Committee till the next Working Committee is constituted except the power of altering the Rules.*

The following resolution was proposed by Dr. R. N. Chatterjee (Jabalpur) and seconded by Dr. D. K. Gupta (Lucknow) :

Resolved that the Central Council of the Indian Medical Association delegates to the Working Committee all its powers and functions excepting the power of altering the Rules, till the next Annual meeting of the Council, according to Rule 35 of the I.M.A."

The Resolution was carried unanimously.

III. *Any other business with the permission of the President.*

Nil.

The meeting came to a close with a vote of thanks to the Chair.

Sd/- H. N. Shivapuri, *President* Sd/- A. P. Mittra, *Hony. General Secretary*

We learn from the Central Office of I.M.A. that the 37th All-India Medical Conference will not be held in December, 1960. Attempts are being made to hold it in February, 1961—Ed., J. Indian M.A.

BRANCH NOTES

BASTI BRANCH—The following are the office-bearers elected for the year 1960-61 : Dr. K. D. Tripathi as patron; Dr. C. S. D. Misra as president; Dr. V. W. Clifford as vice-president; Dr. R. M. Misra as hony. secretary; Dr. P. N. Soni, Dr. P. N. Shukla as joint secretaries; Dr. H. P. Varma as auditor; Dr. B. S. Mathur as representative to Central Council; Dr. R. N. Pande as representative to the State branch council.

BIJNOR BRANCH—At a meeting held on 30-10-60, it was decided to move the Government of U.P., Statutory Body and other non-official organisations to declare that medical licentiates of 10 years service are eligible and will be treated as par with the medical graduates in regard to their promotion to gazetted ranks.

BISHNUPUR BRANCH—The annual general meeting of the branch was held on 29-8-60. Dr. S. D. Banerjee presided. He stressed on the need of increasing members and suggested various new activities. A building for the branch has been proposed to be constructed during 1960-61. The annual report and accounts were adopted. Office-bearers for 1960-61 were elected with Dr. S. D. Banerjee as president; Dr. P. B. Mukherjee and Dr. B. B. Chowdhury as vice-presidents; Dr. A. Mitra as hony. secretary; Dr. N. K. Mallick as asst. secretary, Dr. B. Kar as treasurer.

DEHRA DUN BRANCH—The annual report of the branch for the year 1959-60 shows that membership during the year slightly increased. The year was a record of various functions and activities. An academic symposium was held in April in Rangers College and this was attended by 81 doctors. The Governor of U.P. paid a visit to this branch in December. The State Working Committee met here in April. Mass inoculation was held and 1221 persons were inoculated. WHO Day was celebrated. Twelve clinical meetings were held and interesting subjects were discussed. The executive committee met 10 times during the year. The new Pharmacy Act was considered and disapproved by the members. Office-bearers for 1960-61 were elected with Dr. S. L. Vyas as president; Dr. Col. S. L. Patney as Sr. vice-president; Dr. A. K. Sikhand as Jr. vice-president; Dr. Jagmohan Singh as hony. secretary; Dr. B. R. Sharma as joint secretary; Dr. R. P. Gupta as treasurer; Dr. Mitra Nand, Dr. Mrs. F. I. Chatterjee, Dr. Ram Murti as members of the provincial council; Dr. Pritam Kaur as member of the Central Council; Dr. B. B. Bakshi, Dr. Arjun Das and Dr. J. N. Sharma as auditors.

DHAKURIA BRANCH—The annual general meeting of the branch was held on 23-10-63. Dr. B. Chakraborty presided. The annual report and accounts were adopted. A resolution protesting against the retrograde suggestion of the Planning Commission to revive the Licentiate Course was passed. Office-bearers for 1960-61 were elected with Capt. B. Chakraborti as president; Dr. K. K. Das as vice-president; Dr. A. C. Sengupta as secretary; Dr. M Duttagupta as treasurer; Dr. R. B. Chowdhury as asst. secretary; Dr. K. K. Das, Dr. A. C. Sengupta and Dr. R. B. Chowdhury as members of the provincial council and Dr. A. C. Sengupta as member of the Central Council.

DOHAD BRANCH—The annual meeting of the branch was held on 18-9-60. Office-bearers for 1960-61 were elected with Dr. H. S. Seth as president; Dr. N. M. Sheth as secretary and treasurer. During the year 1959-60, the members visited the Alembic Chemical Works Ltd., Baroda. Dr. H. T. Dixit paid the subscription for the *Practitioner* for 1960.

GHUGUDANGA BRANCH—The monthly general meeting of the branch was held on 28-8-60. Dr. S. N. Mitra presided. Twelve members were present. The proceedings of the last meeting were confirmed. Election of office-bearers of the Bengal Provincial Branch for 1960-61 was held. The annual meeting was fixed to be held on 23-10-60.

The annual general meeting was held on 23-10-60. Dr. P. B. Ghosh presided. Fifteen members were present. The annual report and the accounts for 1959-60 were adopted. Office-bearers for 1960-61 were elected with Dr. S. S. Sarkar as president; Dr. P. B. Ghosh as vice-president; Dr. S. K. Ganguly as hony. secretary and treasurer; Dr. S. Sen as hony. joint secretary; Dr. S. N. Mitra as auditor; Dr. K. K. Dutt as member of the Central Council; Dr. S. K. Ganguli and Dr. K. Ganguly as members of the Provincial Council. Film shows on (1) Management of Burns, (2) Hydronephrosis, (3) Resection at Uretero-Pelvic Junction were shown. Dr. M. M. Ghosh, late of N. R. Sarkar Hospital spoke on Cholera. The annual report for 1959-60 showed that 6 monthly general and 1 executive meeting were held during the last year.

The monthly general meeting was held on 23-10-60. Fifteen members were present. The proceedings of the last meeting were confirmed. A sub-committee was formed to report on the Central Office Circular 60-59-60. The house was of the opinion that it would not be possible to invite the 37th All India Medical Conference. The hony. secretary placed TB Seals for sale and some fund were collected.

GULBARGA BRANCH—The annual general body meeting was held on 16-10-60 with Dr. M. A. Hafeez in the chair. Office-bearers for 1960-61 were elected with Dr. M. A. Hafeez as president; Dr. L. R. Deshpande as vice-president; Dr. P. R. Patki as treasurer; Dr. J. H. Jammihal as secretary; and Dr. P. A. Sathyanarayana Rao as joint secretary. The annual report of the branch for 1959-60 shows that seven meetings were held during the year, and interesting clinical subjects were discussed.

GWALIOR BRANCH—A meeting was held on 5-10-60. The members condoled the death of (1) Col. Dr. Shankar Lal Gargye on 3-10-60, (2) Capt. Dr. D. G. Marathe on 22-9-60. Dr. Marathe was an active member of the branch.

A meeting was held on 15-10-60. Dr. Mahendra Prasad spoke on Role of Plastic Surgery. The present membership of the branch is 65.

KASHMIR BRANCH—The annual general election was held on 30-10-60. Office-bearers were elected with Dr. Harbajan Singh as president; Dr. Hafizullah and Dr. Sudhershan as vice-presidents; Dr. Gh. Rasool as secretary; Dr. M. Muzzafer-uz-Man Drabu as joint secretary; Dr. M. L. Kaul as treasurer.

KHAMMAMETH BRANCH—The general body cum clinical meeting was held on 6-11-60 with the president, Dr. Mohammed Gouse, in the chair. After the routine business and correspondence was gone through, the ballot for election of president and three vice-presidents for the State branch was held.

Dr. A. Sahasra Buddhe gave an interesting talk on Common Diseases of the Eye. There were questions from the audience to which the speaker gave elucidative answers.

Dr. Cranswick of the local Mission Hospital demonstrated a case of Tumour Abdomen in an individual of about 24 years age and discussion followed on differential diagnosis. Dr. Y. Radhakrishnamurti demonstrated a case of Aphasia in an old man of about 58. The peculiar nature of the symptoms lay in his being able to talk and answer questions but not being able to write and read his language (Telugu with which he had all along been so familiar.

KOLAR BRANCH—A clinical meeting was held on 22-10-60 which was largely attended. Dr. G. V. Nargund, District Surgeon, gave a talk on Abnormal Labour and demonstrated cases of (1) Gout, (2) Scrotal Tumour. Dr. Gnanamuttu of E. T. C. M. Hospital, Kolar, presented cases of (1) Valvular Disease of the Heart and (2) Perforated Appendix. Dr. A. Jadhav, spoke of his impression of Udipi Medical Conference. Dr. N. P. Ramaswamy Iyengar, Medical Officer of Health, Leprosy Control, Goribidanur, spoke on some aspects of Leprosy.

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MEDAK BRANCH—The general body meeting and the monthly clinical meeting of the branch was held (date not given). Dr. M. A. Aziz, Medical Officer, Narsapur read a paper on Management of a case of Ruptured Tubal Pregnancy. Dr. Miss Shrimathi demonstrated an operated case of Ectopic Pregnancy. Dr. Prabhakar Rao demonstrated a case of Posterior Inferior Cerebellar Artery Thrombosis. Dr. Astiq Hussain read a paper on School Health Services.

MONGHYR BRANCH—The annual general meeting was held on 4-9-60. Dr. K. P. Mitra presided. Office-bearers for 1960-61 were elected with Dr. K. P. Mitra as president; Dr. J. Prasad and L. C. Prasad as vice-presidents; Dr. P. Datta as hony. secretary; Dr. J. Bhagat and Dr. J. Prasad as hony. joint secretaries; Dr. B. N. Banerjee as hony. treasurer; Dr. S. N. Sen as hony. auditor; Dr. B. B. Bose as member to the Central Council; Dr. N. Hassan, Dr. J. Bhagat; Dr. R. Shaw and Dr. D. N. Prasad as members to the State Council.

M. P. STATE BRANCH—The following have been elected as office-bearers of the State Branch for 1960-61 : President—Dr. G. S. Wagle; vice-presidents—Dr. B. N. Chakravarty and Capt. N. M. Savant; hony. secretary—Dr. R. N. Chatterjee; hony. jt. secretaries—Dr. S. S. Shrivastav and Dr. J. S. Mahashabde; hony. treasurer—Dr. V. P. Khare. Representatives to the Central Working Committee—Dr. R. N. Chatterjee with Dr. S. S. Shrivastav as alternate member.

MYSORE STATE BRANCH—The annual general body meeting was held on 9-10-60 and the State Council meeting on the same day. Office-bearers for 1960-61 were elected with Dr. G. V. Joshi as president; Dr. B. S. Jirge as vice-president; Dr. P. T. A. Chette as secretary; Dr. Felix Misquith as joint secretary; Dr. M. A. Hafeez as treasurer. The following members were elected to the Central Working Committee : Dr. H. V. Upadhye with Dr. C. S. Kuradikeri as alternate member; Dr. K. Lakshminarasimhaiah with Dr. M. C. Marulappa as alternate member.

NASIK BRANCH—The annual report of the branch for the year 1959-60 gives an account of the various activities of the branch during the year, in connection with Refresher Course lectures, Triple Vaccine inoculation, Tuberculosis exhibition etc. In the refresher course a large number of delegates attended the lectures. The Triple Vaccine Centre worked smoothly under the efficient management of Dr. S. K. Kirloskar. An exhibition was conducted for 8 days. The section of routine health check up gave a good service, about 325 people were examined. The branch had been trying to start a permanent B.C.G. vaccination Centre and planning a baby show. Routine monthly meetings were held and lectures were invited to talk on different subjects. In all 15 meetings were held during the year.

Dr. H. N. Shivapuri, president, I.M.A. visited the branch, along with the president of the Maharashtra Territorial Branch.

The following are the office-bearers of the branch for 1960-61 : Dr. D. R. Barde as president; Dr. M. N. Gadgil as vice-president; Dr. M. V. Gosavi as hony. secretary and treasurer; Dr. S. K. Kirloskar as librarian; Dr. D. V. Deolalkar as member of the Central Council; Dr. D. V. Kulkarni, Dr. D. J. Chaudari, Dr. T. V. Bhaskar, Dr. R. P. Korde and Dr. H. S. Joshi as members of the provincial council.

NELLORE BRANCH—The annual report of the branch for 1959-60 shows that the members reached the figure 76 (i.e. 86 per cent of the eligible doctors in the district) as against 46 (i.e. about 50 per cent) last year. The inaugural meeting of the year was held in January 1960 when Dr. P. S. Giri, president, Andhra Pradesh State Branch addressed the meeting. During the period 10 general meetings and 6 executive meetings were held. Eight lectures by doctors were arranged. The branch constituted a building committee and a building fund to which Dr. Giri announced a donation of Rs. 100/-. Many of the members of the branch took part in various social and welfare functions in the district.

NIZAMABAD BRANCH—A meeting was held on 28-10-60. Dr. Gulam Nabi presided. Dr. Razzack presented a case of Neuroblastoma. Dr. K. A. Rao presented a case of T.B. Stomach. Dr. Gulam Nabi demonstrated a case of Lupus Vulgaris, Dr. Subba Rao, a case of Pseudomuscular Hypertrophy. Dr. Majeed Khan narrated about physiological Pitocin Drip in Uterine Inertia.

NORTH MALABAR BRANCH—The 8th annual general body meeting was held on 30-10-60. Dr. K. T. P. Nambiar presided. Office-bearers for 1960-61 were elected with Dr. P. K. Narayana as president; Dr. Miss K. P. Devaki, Dr. R. P. Peters as vice-presidents; Dr. V. Mohamed Hussain as hony. secretary; Dr. P. V. Karunakaran Nair as jt. secretary and treasurer. The executive committee was formed and members to the Central Council and State Council were elected. In the scientific session Dr. K. Sivarajan spoke on the Surgical Significance of Abdominal Pain in General Practice. Dr. V. Govindan Nair spoke on Status of Syphilis.

ORISSA STATE BRANCH—Dr. Sudarsan Misra has been selected by the State Branch for Rotating Internship and his name forwarded to the Central Office.

POONA BRANCH—The following office-bearers have been elected for 1960-61 : President—Dr. C. N. Chandrachud; vice-presidents—Dr. R. B. Chitre, Dr. C. R. Sule; jt. hony. secretaries—Dr. M. G. Bhide, Dr. Y. G. Kelkar; hony. treasurer—Dr. V. B. Nigudkar; Library secretary—Dr. L. D. Purnaik; Central Council members—Dr. V. D. Sathaye, Dr. M. G. Bhide, Dr. R. D. Pendse.

The annual report for 1959-60 states that the managing committee held 9 meetings. The general body met 13 times and 4 special meetings. The branch organised the sixth Poona Medical Congress on 4-5 June 1960 and it was a grand success.

The membership stood at 235 at the beginning of the year. During the year there was an addition of 18 and loss of 18, six by death and 4 by transfer, the rest having left the I.M.A.

PORBANDAR BRANCH—A meeting was held on 27-9-60 to meet Dr. Ramkrishan, Director, Malaria Institute, Delhi and Dr. T. B. Patel, Director, Public Health, Government of Gujarat. Sixteen members were present. By special invitation, two doctors and six guests attended the meeting. Dr. Chavda, the president of the branch welcomed the guests and mentioned how Porbandar suffered from Filiariasis and Malaria. Dr. Ramkrishan thanked the association for meeting him and described at length what government is doing and what it proposes to do. Dr. Jhala also spoke about the drainage scheme which the government is not working with sufficient interest. The meeting closed with a dinner.

The annual report of the branch for 1959-60 shows that the following meetings were held.

One clinical meeting, one special meeting, two condolence meetings besides two annual general meetings one on 6-9-59 to elect office-bearers for 1959-60 and the other on 27-9-60 to elect office-bearers for 1960-61. Medical examination of students was done by Dr. B. N. Joshi and Dr. P. R. Soneji. The members volunteered to inject triple antigen to school children, arranged by the municipality.

REWA BRANCH—A general body meeting of the branch was held on 15-9-60. Dr. K. Y. Shrikhande presided. The members expressed their heart-felt condolence on the death og Dr. Chaturvedi and conveyed sympathies to the members of the bereaved family.

SAHASRA BRANCH—A special meeting of the branch was held on 6-10-60. Nine doctors were present. Dr. N. L. Mukherjee presided over the meeting. Dr. S. K. Verma was elected president; Dr. B. N. Jha, treasurer; Dr. J. Chowdhury, secretary and Dr. G. S. P. Sinha, auditor of the branch. It was decided to hold clinical meetings every month.

A meeting of the branch was held on 10-10-60. Dr. N. L. Mukherjee presided. Nine members were present. It was decided to hold clinical meetings on first Tuesday every month. Dr. B. N. Jha spoke on Vernal Catarrh.

SHIMOGA BRANCH—The monthly clinical meeting of the branch was held on 30-7-60 at McGann Hospital, Shimoga under the chairmanship of Dr. S. Sreenivasan. Dr. D. Krishnamurthy addressed the members on Ophthalmoplegia and its Causes. A film on Reduction of Surgical Haemorrhage by Controlled Hypertension was shown.

The monthly meeting was held on 10-8-60 under the chairmanship of Dr. Anderson, Director, Virus Research Institute, Poona. Dr. Brook Worth, Virus Research Laboratory, South Africa, addressed the members on Implications of Yellow Fever Virus in India.

The monthly meeting was held on 10-9-60 under chairmanship of Dr. D. Krishnamurthy. A General Body Meeting was held and the voting of President and Vice-presidents of the Mysore Branch took place. Discussion on Triple Vaccine Campaign took place. Dr. Sreedhara Upadhyaya and Dr. P. S. Subba Rao, Dr. S. Sreenivasan and Dr. H. R. Basvaraj took part in the discussion.

The annual general body meeting was held on 2nd October 1960 at Sagar. Scientific Sessions were held. Dr. Boshel, J., Fellow of Rockefeller Foundation, addressed on Some Aspects of Yellow Fever, Dr. D. L. N. Murthy Rao addressed on Aspects of Suicides.

A symposium on Ischaemic Cardiac Conditions was arranged. Dr. S. Janardhan addressed on Clinical Features. Dr. Shankar addressed on Diagnosis. Dr. Ashok addressed on Neurological Aspects. Dr. K. R. Balasundaram addressed on Pathogenesis and Treatment.

The following office-bearers were elected at the meeting. Dr. B. R. Shama Rao—President, Dr. S. Gurumurthy—Vice-President, Dr. P. S. Subba Rao—Secretary and Dr. Sreedhara Upadhyaya—Treasurer for the year 1960 61.

The monthly clinical meeting of the branch was held on 5-10-60 under the chairmanship of Dr. Boshal, Fellow, Rockefeller Foundation. Dr. Bertram, Director, Tropical Schiol of Medicine, London, addressed the members on Ultra Microscopic Studies of Virus. Dr. Anderson contributed his opinion of the project. The meeting came to close after the vote of thanks by the secretary.

SIBSAGAR BRANCH—An emergent meeting was held on 8-10-60. The members condoled the death of Dr. B. B. Sen Gupta an active member of the Jorhat Branch, I.M.A.

SITAMARHI BRANCH—The annual meeting of the branch was held on 16-10-60. A large number of members of the subdivision attended the meeting, besides the special invitees. The secretary apprised the house of the activities and achievements of the branch during 1959-60. Dr. P. N. Jha, secretary emphasised the need of an office-room where foreign journals and other informative literatures may be made available to the members and also informed that more refresher course lectures would be arranged provided the members attend in large numbers. Dr. B. N. Das Gupta of Darbhanga Medical College gave a talk on Emergency in Paediatrics, which was followed by a discussion. Sri N. Prasad, the S.D.O., Sitamarhi assured his full co-operation with the members of the branch in their activities.

The following office-bearers were elected for 1960-61 : President—Dr. B. N. Jha, vice-president—Dr. K. P. Bhattacharya, secretary—Dr. P. N. Jha, joint secretary—Dr. R. Singh, treasurer—Dr. N. P. Sinha, auditor—Dr. A. P. Verma.

SULTANPUR BRANCH—The annual general meeting was held on 9-10-60. Twentytwo members were present. A Symposium on Problems Facing the Medical Profession and Suggestions as to their solution was held. Drs. H. C. Varma, R. C. D. Garg and J. K. Sen Gupta participated. All the members took keen interest in the discussion. It was felt that the association should be strengthened. The members expressed their deep concern over the low payments to the service doctors and imposition of drugs tax, sales tax, etc., on the medical profession. They also felt that quackery should be abolished very soon. All other aspects of the difficulties of the profession was discussed.

Dr. J. K. Agrawal, Secretary of the Branch narrated the activities of the branch during ending year. The death of Sir Joseph Bhore was condoled. Annual subscription was raised from Rs. 18/- to Rs. 24/-. Co-operation and support was extended towards the struggle of the public against the proposed increase in the electricity rate. The introduction of the smallpox eradication scheme was welcomed and support extended to the District Health Authorities.

Two clinical cases of repaired Strangulated Hernia were presented by the staff of the District Hospital.

The following were elected office-bearers for the year 1960-61 :

President—Dr. H. C. Varma; Hony. Secretary—Dr. J. K. Agarwal; Vice-President—Dr. R. C. D. Garg; Auditor—Dr. K. C. Mazumdar; Central Council members : Dr. J. K. Agrawal with Dr. S. S. Misra as alternate; State Council Member : Dr. S. N. Gupta with Dr. S. P. Garg as alternate.

The following were elected delegates to the Silver Jubilee State Conference, Uttar Pradesh—Dr. S. S. Misra, Dr. H. D. Shukla, and Dr. J. L. Khattri.

The meeting ended with a vote of thanks to the outgoing president and secretary.

The members were entertained to tea by Dr. J. K Agarwal during a break in the meeting and at dinner by Dr. H. C. V. Varma after the meeting.

SURAT BRANCH—The annual report of the branch for 1959-60 shows that the total members were 101 on 30-9-60. Nine ordinary meetings, two special meetings and one film show were held during the year. A "Park Party" was arranged in December 1959 and an annual dinner on 25-9-60. Dr. R. K. Desai, a member of the branch went to Europe to represent I.M.A. at the World Health Organisation and to receive the diploma of F.C.C.P. of the American College of Chest Physicians. Office-bearers for 1960-61 are the following : Dr. R. N. Dixit as president; Dr. D. C. Sheth and Dr. N. T. Mascate as vice-presidents; Dr. S. G. Dhanik as secretary; Dr. B. B. Gondhi as joint secretary; Dr. M. G. Patel as treasurer.

TARAKESWAR BRANCH—An ordinary general meeting was held on 31-7-60. 25 members were present. Dr. Harisadhan Datta presided. Tragic death of colleague Dr. Satish Nandy of Haripal in a Railway accident, while crossing the line with a cycle, was condoled. Dr. Biswanath Das, Resident Surgeon, Chittaranjan Seva Sadan and an active member of this branch, was congratulated for his sailing to England for higher studies. Dr. Bijoy Karfa, also a member, was congratulated for his donation of Rs. 3,000/- for local High School towards scholarship for poor students. A refresher course of lecture on "Peptic Ulcer" was delivered by Dr. Hari Sadhan Datta in which Dr. Mukul Goswami and other took part.

Annual general meeting was held on 23-10-60. 31 members were present. Dr. Surendra Nath Mukherjee presided. Bijoya greetings were exchanged and several opening songs were sung by Srimati Shibani Bagchi. The following office-bearers were elected for new session 1960-61. Dr. Surendra Nath Mukherjee—President, Drs. Hari Sadhan Datta, Radha Raman Paul and Manohar Bera—vice-presidents, Dr. Radhakanta Goswami—secretary, Drs. Nalini Kanta Dhara and Chandra Sekhar Dhara—asst. secretaries. The secretary reported that membership strength in last session increased from 69 to 74. In the face of economic depression, the branch met the increased C.P.C. from Rs. 8 to Rs. 9 but decreased local fund contribution from Rs. 4 to Rs. 3.

VIDESHA BRANCH—Office-bearers of this branch for 1960-61 were elected with Dr. P. K. Murthy as president; Dr. D. D. Datar as hony. secretary and treasurer.

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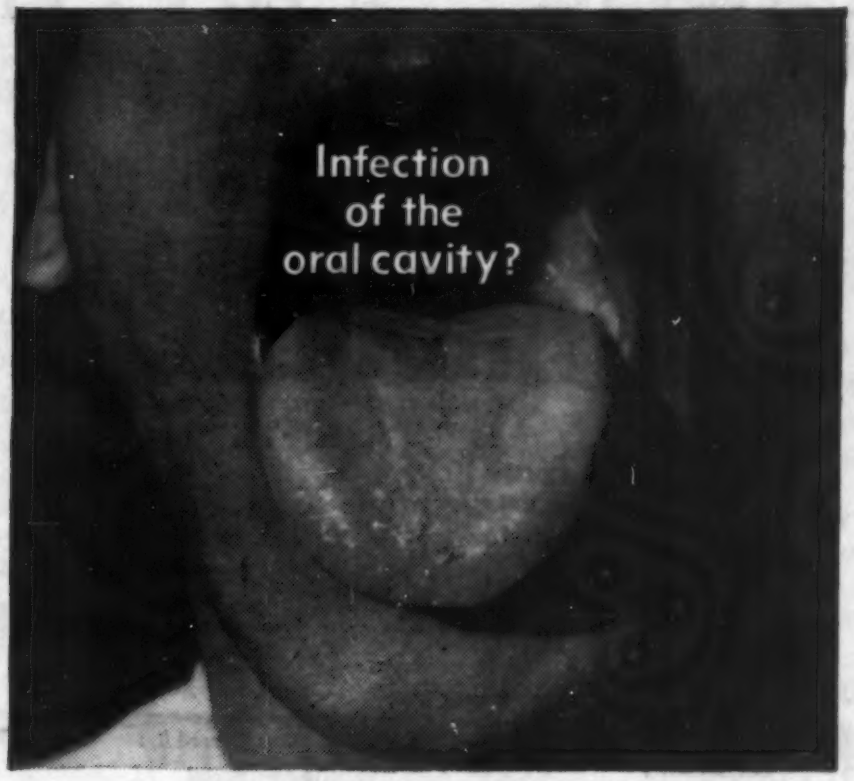

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† Mou, T.W.: GP. *12*: 103, 1955.

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Editor—Dr. P. K. Guha, M.B., M.R.C.S. (Eng.). D.O.M.S. (Lond.)

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